471

ACUTE ORAL TOXICITY OF 1,496 CHEMICALS FORCE-FED TO CARP

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The carp (Cyprinus carpio), introduced into North America in the nineteenth century, has become so undesirably numerous in many waters as to suggest control for the best interests of game fish resources or best water quality. For the most part the areas concerned are large so that complete eradication of carp would be very difficult, and the destruction of other fish by nonselective chemical treatment would make this method dangerous and costly. Research on selective methods of chemical control seems desirable. The selective feeding habits of carp are favorable to the development of a poison bait technique. A preliminary step toward development of such a technique has been the screening of large numbers of chemicals for their effect on carp when force-fed to fish held in large aquariums at the Fish Laboratory at DeBruce (near Livingston Manor, N.Y.).

Precedent for the discovery of a suitable poison to be incorporated into bait for carp has been established by the development of many chemical pest control devices. Hundreds of chemicals are now used extensively against such pests as insects, mites, nematodes, and rodents. Most of them are nonselective, i.e., they act against many besides the target species. Development of safer, selective poisons has been difficult.

The subject of toxicity, selective or otherwise, is very large and involves all life forms from viruses to the larger species of animals and plants. A vast and growing literature encompasses efforts in the medical and agricultural fields, but this is not true of fisheries, where chemical work has been relatively limited.

Nevertheless, several extensive screening programs have been carried out as, for example, the attempt to find chemicals that would selectively kill oyster enemies and the successful efforts to find a selective chemical that would act at certain levels only against sea lamprey larvae (Applegate et al, 1957). In addition, a number of insecticides have been employed successfully in fishery work, and these have largely been general in effect.

The screening method of search for effective compounds is often the most practical available today, but in the future chemicals may be discovered in a more efficient manner, as outlined by Adams (1959): "Comparative biochemistry is, of all branches of science, the one that holds the master key for logical discovery of selective toxic agents. It can reveal metabolic differences between the economic species which man wishes to save and the uneconomic species which he wishes to destroy. Once these metabolic peculiarities are discovered the next step is to devise selective agents which can use them to cause irreparable damage to the uneconomic species. Unfortunately, comparative biochemistry has so far

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attracted few workers although so much of selective toxicity is actually applied comparative biochemistry."

The program of screening compounds for use in a carp bait encountered the usual difficulties. None of the 1,496 chemicals reported on here proved suitable for incorporation into a bait (on a solubility-palatibility basis), but the force-feeding tests do provide the only extensive acute oral toxicity data on fish available today. Accordingly the authors hope that others will find this material useful as a reference for future studies.

DEVELOPMENT OF EXPERIMENTAL MATERIALS AND TECHNIQUES

A laboratory was constructed and simple techniques for capturing and holding carp, obtaining chemicals, force-feeding, and tagging were devised before force-feeding could be undertaken.

The Fish Laboratory is located below a clear, continuously flowing, constant-temperature (47°F) spring with a capacity of 50 to 100 gallons of water per minute. The water, of pH 6.7, contains 10 p.p.m. of alkalinity and traces of other compounds and elements. It is fed into large tanks by gravity through nontoxic, black-iron pipes.

The carp were held and observed in 13 glass-fronted, fiberglass tanks (Loeb, 1959) of 350 and 550 gallons capacity. Each tank is independently maintained at any desired temperature by stainless-steel or aluminum coils connected to a closed-circuit oil-burning system and controlled by a solenoid and thermostat. The tanks are nontoxic to fish and other forms of life and require no maintenance.

The test carp were captured with an alternating-current electric boat shocker in the New York State Barge Canal. After transportation to the laboratory by tank truck supplied with oxygen, they were held for weeks at spring temperature of 47°F. The fish ranged from 1 to 10 pounds in weight but averaged around 3 pounds. Poor-quality fish were rejected.

The compounds force-fed to the fish were solicited from governmental, educational, and private agencies (table 3). Since it was impossible to accurately predict the effect of individual chemicals on carp, the majority of compounds were picked by the agencies in random fashion, and a great variety was received. All of the compounds reported on were accompanied by chemical names, many of which were changed to conform to the Chemical Abstracts system. A number also have trivial or trade names, listed in table 2.

Development of a method of force-feeding proved to be difficult, but the final technique (Loeb and Kelly, 1960) was completely adequate. For many fish, force-feeding is relatively simple because direct access to the stomach may be had through the pharynx. Carp, however, possess pharyngeal teeth which form an effective barrier to an ordinary probe. Accordingly a machined aluminum tube was developed in a shape which allowed it to be forced past the grinding mill formed by the pharyngeal teeth and the basi-occipital bone and into the thin-walled esophagus where the capsules containing the poison were deposited. A fiber glass rod was used as a plunger. The technique is an art but properly performed is almost always successful.

During the force-feeding operation the carp were immobilized in a nose-up position by a specially constructed device employing foam-rubber jaws and activated by compressed air (Kelly, 1959).

The force-fed fed fish were marked on the jaw or fins with brightly colored, paper laundry tags (Kelly and Loeb, 1959) or with colored thread tied to the serrated dorsal and anal spines.

The chemicals to be tested were placed in one or two No. 5 gelatin capsules by means of an eyedropper or drawn glass funnel.

SCREENING PROCEDURE

The basic objective of the force-feeding program was to discover compounds that were lethal at low doses of 30 milligrams or less of

compound per kilogram of body weight. Accordingly, all compounds were, if possible, force-fed at a much higher initial dose, and thus the need for further testing of most of them was eliminated. Lethal compounds were retested at lower doses.

Each chemical, in the gelatin capsules, was force-fed initially to three fish. Additional tests employed many more fish. The test fish were removed from 47°F water, force-fed, tagged, and placed in 65°F running water for observation. They quickly adjusted to this temperature and sometimes attempted to feed immediately.

Dissection showed that gelatin capsules in these fish held at 65°F disintegrated in approximately 1 hour. That time would be required before the chemical could come into contact with the intestine (this would be true for most chemicals; several chemicals appeared to react with the capsule and possibly contacted the intestine more quickly). Therefore as a general rule 1 hour should be deducted from the time to effect in table 1.

Fish that had been force-fed with one chemical were often held with fish that contained other chemicals. This mixing method was considered to be suitable under the circumstances, since interesting chemicals were retested on isolated fish.

A few early tests were run for only 24 hours, but the minimum period for almost all was 40 hours or more. Many fish were observed for a number of days.

Judging of effect was visual. If a fish acted or looked other than normal it was considered to be sick. If no movement occurred it was recorded as dead. Symptoms were noted, and special attention was paid to possible positive directional movements.

In table 1 the symbol for "less than" (<) is used often to represent sickness, recovery, or death occurring before the time of observation. The symbol for "more than" (>) is used occasionally to represent doses where exact data are for one reason or another lacking.

DISCUSSION OF TOXICITY AND SYMPTOMS OF TOXICITY

That a detailed analysis of the relative toxicity of compounds and groups of compounds tested would be meaningless will become apparent if table 1 is carefully examined. It appears that the toxic compounds in different groups affected fish without rhyme or reason. This is not entirely true since some groups included many toxic compounds while others contained very few. There are physiological reasons for effect or lack of effect of compounds on fish but these are little known. So far the attempt to relate toxicity to molecular mechanisms has succeeded in only a few cases (Adams, 1959). These few include determination of the effects of carbon monoxide, cyanide, the reversible anticholinesterase poisons physostignine and neostigmine, the irreversible organic phosphates isopropylflurophosphate (DFP), tetraethylpyrophosphate (TEPP), and others, the protein secreted by the botulinus bacillus which disrupts the acetylcholine cycle, and flouroacetic acid which interferes with the citric acid cycle. Nevertheless, the metabolic targets of most compounds remain uncertain, and most common poisons such as nicotine and arsenic are incompletely understood. Therefore results of the tests presented in table 1 cannot be explained adequately and, in fact, in most cases cannot be explained at all.

The apparent randomness of effect illustrated in table 1 is more easily understood if it is remembered that physiological action is highly dependent on details of structure. An example would be the "Lindane" series (page 109) where only the delta isomer produced an effect. Certain compounds in a group might readily produce symptoms while others, apparently close related, produce none. An example of the manner in which activity can be changed by structural variation is the following from Albert (1960): The vitamin activity of thiamine drops to 5 percent if the methyl group is removed from the pyrimidine ring, to less than 1 percent if the methyl group is removed from the thiazole ring. If an extra methyl group is inserted into the thiazole ring between nitrogen and sulfur the vitamin activity completely disappears. That there are many

physiological routes by which compounds affect fish is shown in table 1 where most unrelated groups of chemicals included one or more toxic compounds.

Despite the "confusion" resulting from lack of knowledge of the chemicals and their effects on carp, certain figures and relations pertaining to toxicity did appear. These are probably unimportant to the fields of toxicity, chemistry, and physiology but may be of interest to those contemplating screening programs of their own.

Of the 1,496 chemicals presented in table 1, only 7 percent killed all three of the fish that were initially fed large doses. This is typical of a screening program employing randomly selected compounds. Chemicals received from companies that made an effort at selection killed a slightly higher percentage of fish.

Certain large groups of compounds showed a high degree of biological activity and included the aliphatic phosphates, amine salts and phenols, the heterocyclic alkaloids, and the inorganic halogens. Groups showing little biological activity included the aliphatic carboxylates, carbamates, carbanilates, metal amine complexes, sulfides, and disulfides, and the aromatic hydrocarbons, esters, ethers, and amines. Very few chemicals killed fish at very low doses of 10 milligrams per kilogram or less.

A number of compounds that have been widely used as insecticides or rodenticides produced little or no acute effect when force-fed to carp. From the publicity these compounds have received and the furor often resulting from their improper use one would expect them to have some acute effect on carp. They include pure toxaphene, the DDT derivatives including DDT and methoxychlor, warfarin, lindane, aldrin, heptachlor, chlordane, dieldrin, pure Thiodan, parathion, and arsenic trioxide.

The great majority of lethal compounds produced only the vaguest of symptoms. Generally speaking, fish become sluggish over a period of time which varied considerably depending upon fish, chemical, and dose. Toward the end of the test period the fish turned on their sides either at the surface of the water or the tank bottom and died. Movements during the period when the fish were affected can only be described as random. None of the 1,496 chemicals produced surfacing (as caused by certain derivatives of d-lysergic acid; (Loeb, 1962), or any positive directional movement that could be detected.

A few chemicals did produce positive symptoms. Three chemicals popularly regarded as chlorinated hydrocarbons caused alternating and long-lasting periods of irritable, erratic, and relatively normal swimming patterns. They were toxaphene (60.5 percent miscible), endrin, and Thiodan. Most lethal aliphatic phosphates caused noticeable paralysis and color changes. A few other chemicals also produced recognizable symptoms. Ephedrine, for example, caused a color loss that lasted for weeks.

Since the force-fed fish were not held for more than a few days for observation, the effects presented in this paper must be judged as acute or immediate. It is entirely possible that single doses of some of the chemicals would produce chronic symptoms, but such observations were beyond the scope of this study.

ACKNOWLEDGMENTS

The force-feeding program would not have been possible without the cooperation of many chemical companies, the United States Department of Agriculture, and Cornell University. These agencies (table 3) assembled and shipped chemicals (sometimes specially formulated for the project) free of charge for screening.

John F. LesVeaux of the Research Department of the Niagara Chemical Division, Food Machinery and Chemical Corporation, and Drs. Edwin E. Dunn and Clarence L. Moyle of the Biochemical Research Laboratory, Dow Chemical Company, provided considerable advice pertaining to handling of chemicals and screening methods.

The chemical abstracting and classifying of compounds was done by Dr. Emil J. Moriconi of Fordham University.

Kenneth F. Stafford of the Fish Laboratory demonstrated exceptional initiative in providing

thousands of large fish and maintaining the complicated facilities needed for the study.

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Table 1. Screened compounds listed by arbitrary classification with results obtained by forcefeeding to carp.

The nomenclature used herein is based on the Definitive International Union of Pure and Applied Chemistry (IUPAC) 1957 Rules, and is in accord with the conventions of Chemical Abstracts. The Classification scheme, however, is our own.

All of the chemicals listed were forcefed to carp at the doses (total material without regard for formulation) shown. Effects are listed as follows: NE, no effect; S, sickness; R, recovery; D, death. All tests were carried out at temperatures of 65°F.

The Laboratory Accession Number is the number assigned to each chemical by the Fish Laboratory. Likewise many chemicals were assigned code letters and numbers by the submitters who are identified by number in Table 3.

Index of Classification of Compounds Listed in Table 1.

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ALIPHATICS

Saturated Hydrocarbons

alkanes

Laboratory Accession Number	Submitter's Chemical Number	Submitter	Chemical Name	Dose MG/KG	Effect & Time
102	162	9	toxaphene(complex mixture of compounds resulting from the chlorination of camphene until product contains 67 to 69% chlorine)("TOXAPHENE," 60.5% miscible)	41,70,136 111 233 271	NEL8 S<21,D<41 S<21,D<21 S<21,D27
145	68	9	toxaphene	154,227,392	NEL8
131	ME 6769	9	bis-[S-(diethoxyphosphinothioyl)mercapto]methane ("HIALATE," 25% wettable)	43,54 87	NE28 D<21
106	1321	9	bis-[S-(diethoxyphosphinothioyl)mercapto]methane ("HIALATE," 47.1% miscible)	54,75,189	NE24
107	H-1240	9	bis-[S-(diethoxyphosphinothioyl)mercapto]methane ("HIALATE")	70,83,189	NE24
147		9	1,2-bis(diethoxyphosphinothioylthio)ethane	33,47,71	NEL8
215	H-5895	9	1-methoxy-2-nitro-1-phenylpropane	53,92,97	NEL8
216	H-5936	9	tris(octadecyloxymethyl)dimethylaminomethane	83,121,145	NEL8
220	H-5937	9	tris(acetoxymethyl)dimethylaminomethane	95,108,146	NEL8
231	BIO 5927	9	bis(2-amino-1,2-dimethylpropoxy)methane	56,66,92	NEL8
232	BIO 5858	9	tris(acetoxymethyl)nitromethane	125,149,169	NEL8
235	BIO 5926	9	1,1-bis(2-amino-2-methylpropoxy)butane	59,68,112	NEL8
236	BIO 5925	9	bis(2-amino-2-methylpropoxy)methane	74,90,139	NEL8

alkanes

Laboratory Accession Number	Submitter's Chemical Number	Submitter	Chemical Name	Dose Mg/Kg	Effect & Time
240	BIO 5849	9	bis(2-nitro-2-methylpropoxy)phenylmethane	143,163,188	NE96
243	BIO 5848	9	bis(2-methyl-2-nitropropoxy)methane	164,180,184	NE96
244	BIO 5897	9	2-methyl-2-nitro-4,6-dioxaoctane	59,72,73	NE96
246	BIO 5847	9	2,3-dimethyl-2,2-dinitrobutane	129,143,169	NE96
249	BIO 5907	9	2-amino-2-methyl-1,5-dioxaspiro[5,5]undecane	89,116 107	NE96 S18,R<89
254	N-5939	9	bis(2-amino-2-methylpropyl)methane	48,52,69	NE72
255	N-5946	9	21.3% 1,1-bis(p-chlorophenyl)-2-nitropropane ("PROLAN") 42.7% 1,1-bis(p-chlorophenyl)-2-nitrobutane ("BULAN") 16% related compounds; 20% xylene	77,78,109	NE72
225	N-5944	9	1,1-bis(p-chlorophenyl)-2-nitropropane ("PROLAN")	61,68,138	NE48
276	N-5945	9	1,1-bis(p-chlorophenyl)-2-nitrobutane ("BULAN")	132,153,185	NE42
256	N-5936	9	tris(octadecyloxymethyl)nitromethane	87,95,117	NE48
261	BIO 5862	9	tris(octanooxymethyl)dimethylaminomethane	91,95,97	NE48
264	N-3514	9	2-chloro-1-nitropropane	114 125 131	S2:40,D<18 D<18 D<18
267	N-3613	9	1,3-diamino-2,2-dimethylpropane	57,89,99	NE44
288	N-5850	9	bis-(2-amino-2-methylpropyl)methane	61,67 108	NE120 D<48
293	BIO 5861	9	tris(propanoxymethyl)dimethylaminomethane	59,109,119	NE46

alkanes

Laboratory Accession Number	Submitter's Chemical Number	Submitter	Chemical Name	Dose Mg/Kg	Effect & Time
294	BIO 5896	9	2-chloro-1-methoxy-2-nitro-1-phenylbutane	91,109,123	NE46
295	BIO 5846	9	2-ethyl-2-methyl-1,3-dinitropropane	1.5,8 20 63,83,161 84 113 125	NE48 S<2:15,R<46 S<2:15,D<22 S2,D27 D2 S2,D<22
300	MA 449	7	3,8-bis(2,3-dimethyl-6,7-dimethoxy-1,2,3,4-tetrahydro-1-isoquinolyl)decane dihydrochloride	71 71 103	S26,D<45 D26 S5,D26
315	#134	20	2,2-bis(3-chloro-4-hydroxyphenyl)propane	93,106,176	NE41
322	#135	20	2,2-bis(3,5-dichloro-4-hydroxyphenyl)propane	160,209 168	NE96 D<18
357	O-111	28	nitromethane	116,134,154	NE72
373	O-633	28	hexachloroethane	264,383,462	NE43
422	LF-39	3	bis(2-chloroethoxy)methane	103,126,191	NE72
415	LF-32	3	1,2-dibromoethane	186,196 164	NE90 D<17
784	N-5968	9	1-bromo-1-nitropropane	86,122,160	NE42
786	N-5966	9	1-chloro-1-nitrobutane	78,117,121	NE41
787	N-5967	9	1-bromo-1-nitroethane	111,124,145	NE41
824	N-5963	9	2-chloro-2-nitropropane	112,116 104	NE43 D<43
825	N-5962	9	1-chloro-1-nitroethane	90,120,187	NE44

Laboratory Accession Number	Submitter's Chemical Number	Submitter	Chemical Name	Dose Mg/Kg	Effect & Time
834	N-5965	9	2-chloro-2-nitrobutane	141,148,152	NE115
835	N-5964	9	1,1-dichloro-1-nitropropane	56,146,171	NE115
846	N-5961	9	1-chloro-2-nitropropane	115,139 88 142 218	NE96 S<21,D<48 D<18 S<218,D<70
847	N-5960	9	chloronitromethane	80,130,151	NE90
850	N-5858	9	tris(acetoxymethyl)nitromethane	103,200,250	NE89
855	N-5951	9	2-bromo-1-methoxy-2-nitro-1-phenylpropane	114,242,262	NE69
864	N-3664	9	dibromonitromethane	57,78,267 139 204 240	NE96 D<24 S<66,D69 D<66
865	N-3515	9	3-chloro-1-nitropropane	100,113,177	NE90
866	N-3665	9	monobromonitromethane	18,25,41 79 107	NE120 D<72 S4,D<21
882	LF 48	3	1,2-dibromo-3-chloropropane	101,102,142	NE72
1020	1656	28	1,2-dichloroethane	230,235,263	NE43
1321	0-748	28	diphenylmethane	24,109,150	NE66
1546	SBP-194-P RS 2212	10	1-hydroxy-1-phenyl-2-piperidinoethane hydrochloride	109,145,195	NE45
1575	LF-161	3	1,2-epoxy-3-phenoxypropane	121,148,182	NE44
1604	1842	28	1,1,1-trichloro-2,2-diphenylethane	55,69,181	NE120

alkanes

Laboratory Accession Number	Submitter's Chemical Number	Submitter	Chemical Name	Dose Mg/Kg	Effect & Time
1605	1848-a	28	1-(2-chloroethoxy)-2-(2,3,4,6-tetrachlorophenoxy)ethane	44,97,102,178 63 195 309	NE96 D<18 D48 D<72
1625	0-2061-a	28	1,1,1-trichloroethane	47,73,294	NE43
1634	0-2113-b	28	bis[2-(2-chloroethoxy)ethoxy]methane	55,56,217	NE46
1635	0-2117	28	(1,3-dimethyl-1,3-diphenylheptadecyl)cyclobutane	51,89,92	NE45
2154	LF 194	3	1,1,2,2-tetrabromoethane	139,155,275	NE44
2162		57	2-nitro-1-phenylpropane	45,80,126	NE120
221	BIO 5901	9	2-methyl-3-nitro-1,5-dioxaspiro[5,5]undecane	114,125,136	NE43
241	BIO 5908	9	3-dimethylamino-1-methyl-1,5-dioxaspiro[5,5] undecane	59,109,128	NE96
83		25	1,2-bis(m-nitrophenylsulfonamido)ethane	46,93,106	NE22

DDT derivatives

79		14	1,1,1-trichloro-2,2-bis(p-chlcrophenyl)ethane ("DDT")	98,161,183	NE24
121	784	9	1,1,1-trichloro-2,2-bis(p-chlorophenyl)ethane ("DDT")	98,107,171	NE72
122	966	9	1,1,1-trichloro-2,2-bis(p-chlorophenyl)ethane ("DDT," 25% miscible)	59,266 63	NE96 D<72
139	72	9	1,1,1-trichloro-2,2-bis(p-chlorophenyl)ethane ("DDT," 50% wettable)	52,60,132	NE96
996	1506	28	1,1,1-trichloro-2,2-bis(p-chlorophenyl)ethane ("DDT")	120,151,240	NE96

DDT derivatives

Laboratory Accession Number	Submitter's Chemical Number	Submitter	Chemical Name	Dose Mg/Kg	Effect & Time
97	218	9	1,1-dichloro-2,2-bis(p-chlorophenyl)ethane ("DDD")	97,105,163	NE24
100	215	9	1,1-dichloro-2,2-bis(p-chlorophenyl)ethane ("DDD," 50% wettable)	82,103,107	NE29
138	87	9	1,1,1-trichloro-2,2-bis(p-methoxyphenyl)ethane ("METHOXYCHLOR," 24% miscible)	46,49,175	NE47
94	94	9	1,1,1-trichloro-2,2-bis(p-methoxyphenyl)ethane ("METHOXYCHLOR," 50% wettable)	44,50,89	NE24
88	724	9	1,1,1-trichloro-2,2-bis(p-methoxyphenyl)ethane ("METHOXYCHLOR")	154,238,259	NE24
973	1716	28	1,1,1-trichloro-2,2-bis(p-methoxyphenyl)ethane ("METHOXYCHLOR")	192,248,310	NE44

Unsaturated Hydrocarbons

alkenes

263	N-3615	9	1-(2-furyl)-2-nitroethylene	152,167,221	NE43
317	#124	20	1,2,3,4-tetrachlorobicyclo[2.2.1]hept-2-en-5-ol(exo)	151,204,219	NE96
319	#125	20	1,2,3,4-tetrachlorobicyclo[2.2.1]hept-2-en-5-ol(endo)	193,289,293	NE96
326	#107	20	1,2,3,4-tetrachloro-5-methyl-5-phenylbicyclo[2.2.1]hept-2-ene	131,146,162	NE96
416	LF-33	3	1,4-dibromo-2-butene	257,258 238	NE96 D472
1218	N-1081	9	1,4-bis(diethoxyphosphinyl)-2-butene	47,75,118	NE72

alkenes

Laboratory Accession Number	Submitter's Chemical Number	Submitter	Chemical Name	Dose Mg/Kg	Effect & Time
1227	N-1195	9	1,4-bis(diethoxyphosphinothioylmercapto)-2-butene	92,99,153	NE72
1564	FORM 24	58	3-chloro-2-methylpropene	74,123,144	NE43
1608	1860-a	28	tetrachloroethylene	119,174,282	NE94
266	N-3614	9	1-phenyl-2-nitro-1-propene	145,215,219	NE43

alkadienes

404	LF-21	3	hexachloro-1,3-butadiene	73,73,111	NE96
888	S-5588	18	3,4-bis(p-hydroxyphenyl)-2,2-hexadiene	100,103,155	NE42
1319	O-739	28	p-metha-1,8-diene	33,89,93	NE70
1562	FORM 16	58	2,5-dimethyl-1,5-hexadiene	97,97,102	NE43
1563	FORM 17	58	2,5-dimethyl-2,4-hexadiene	79,105,133	NE43

alkynes

417	LF-34	3	1,4-dibromo-2-butyne	153,172 218	NE72 D2
518		2	2,5-dicarbanilino-2,5-dimethyl-3-hexyne	73,92,111	NE72
2205	LF 241	3	Mixture: 4-bromo-2-butyn-1-ol 1,4-dibromo-2-butyne	29,39 105 122 136	NE48 D<67 D<18 S<20,R<48

Alcohols

Laboratory Accession Number	Submitter's Chemical Number	Submitter	Chemical Name	Dose Mg/Kg	Effect & Time
62		15	α-(1-methylaminoethyl)-benzyl alcohol ("EPHEDRINE")	128 171 190 91 172 177	S1:45,R312 S<18,R186 S<18,R186 S2,D264 S<18,D<43 D<21
238	PIO 2813	9	2-amino-1,3-propanediol	202,206 108	NE96 D<92
273	N-3611	9	2-nitro-1-ethanol	112,121,126	NE46
275	N-3610	9	1-phenyl-2-nitro-1-ethanol	73,95,127	NE42
356	O-33	28	2-(p-tert-butylphenoxy)ethanol	64,87,102	NE72
363	O-374	28	3-(2-cyclohexyloxy-1-methylethoxy)-2-propanol	45,131 72	NE48 S0:45,D3:30
386	O-1450	28	1,1',1" -nitrilotri-2-propanol	50,79,95	NE46
388	O-1453	28	triethylene glycol	59,61,127	NE44
400	LF 17	3	2-chloroethanol	83,109,126	NE96
420	LF-37	3	1,3-dichloro-2-propanol	84,148	NE72
424	LF-41	3	polypropylene glycol (av. mol. wt. 750)	85,113 120	NE72 S0:50,D1:40
401	LF-18	3	2-bromoethanol	97,99,126	NE96
621	O-373	28	2-(2-cyclohexyloxyethoxy)ethanol	74,92,131	NE72
627	O-164	28	2-(α-methylbenzyloxy)ethanol	52,127,146	NE72
628	O-567	28	3,7-dimethyl-2,6-octadien-1-ol	104,114,117	NE72

Alcohols

Laboratory Accession Number	Submitter's Chemical Number	Submitter	Chemical Name	Dose Mg/Kg	Effect & Time
632	O-519	28	Need structure; could be p-menth-1-en-8-ol (α-terpineol); or p-mentha-1,4(8)-diene (β-terpineol)	57,71,110	NE72
653	300	28	2-[2-(2-ethylhexyloxy)ethoxy] ethanol	74,119,126	NE43
681	405	28	butanol	75,81,91	NE96
682	116	28	borneol	98,165,199	NE120
699	301	28	2-(2-hexyloxyethoxy)ethanol	120,127,127	NE96
773	N-5982	9	2-chloro-2-nitro-1-butanol	88,132,134	NE42
774	N-5981	9	2-chloro-2-nitropropanol	191,233 109 117 149 249	NE96 D<16 S2:30,D4 D<17 S<24,D<49
832	N-621	9	2,2,2-trichloroethanol	162,224,242	NE120
833	N-622	9	1-phenyl-2,2,2-trichloroethanol	140,172,215	NE120
836	N-5986	9	2-chloro-2-nitro-1,3-propanediol	206,224,269	NE96
837	N-5985	9	2-bromo-1-phenyl-2-nitroethanol	137,151 137 148 149	NE96 D<94 S<144,D148 D<22
840	N-5983	9	1-chloro-1-nitro-2-pentanol	94,122,128	NE96
841	N-5984	9	2-chloro-2-nitro-3-nonanol	76,136,154	NE96
900	XS-544	18	3-aminopropanol	74,77,158	NE72
906	S-575	18	2-(benzylmethylamino)ethanol	80,118 130	NE72 D<48

Alcohols

Laboratory Accession Number	Submitter's Chemical Number	Submitter	Chemical Name	Dose Mg/Kg	Effect & Time
909	S-576	18	2,2'-(benzylamino)diethanol	86,107,122	NE72
917	S-5710	18	2-(benzylamino)ethanol	123,141	NE43
942	S-4815	18	3-o-tolyloxy-1,2-propanediol ("MEPHENESIN")	60,97,103	NE46
954	O-1774	28	p-isopropylphenethyl alcohol	74,110 70	NE49 S29,R<47
956	1680	28	benzyl alcohol	127,136,136	NE48
963	773	28	2-(3-methyl-2-norbornylmethoxy)ethanol	166,179,280	NE48
976	990	28	2,4,4,4,7-pentamethyl-2'-flavanol	>50,>50,>50	NE48
979	937	28	2-methyl-1,3-pentanediol	124,135,175	NE45
980	1140	28	2,2',2"-nitrilotriethanol	176,179,213	NE45
969	949	28	cinnamyl alcohol	67,112,163	NE42
970	1234	28	heptadecanol	115,117,132	NE42
988	1123	28	1-[2-(3,3,5-trimethylcyclohexyloxy)propoxy]-2-propanol	100,183,196	NE43
994	1740	28	2-(2-ethoxyethoxy)ethanol	229,246,252	NE96
1003	774	28	2-[2-(3-methyl-2-norbornylmethyl)ethoxy] ethanol	133,145,176	NE72
1017	940	28	2-ethyl-1-hexanol	96,132,144	NE43
1031	1442	28	X-(2-ethoxybutoxy)propanediol	107,118 217	NE72 S0:40,D<17
1032	1040	28	2-(benzyloxy)ethanol	107,183,218	NE72

Alcohols

Laboratory Accession Number	Submitter's Chemical Number	Submitter	Chemical Name	Dose Mg/Kg	Effect & Time
1036	1463	28	2-(N-ethylanilino)ethanol	150,186,187	NE72
1039	1170	28	p-methoxybenzyl alcohol	144,155,183	NE72
1049	1232	28	tetradecanol	96,142 153	NE46 D<46
1053	1233	28	1,1'-oxydi-2-propanol	104,143,206	NE46
1260	LF 92	3	polymeric glycol mixture ("P-1200 POLYGLYCOL")	104,108 115 122 139	NE120 D<17 S3:30,D<22 S2:20,D<22
1261	LF 78	3	2-dimethylamino-1,2-propanediol	50,136,195	NE168
1263	LF 95	3	polymeric glycol mixture ("P-400 POLYGLYCOL")	96,130,141	NE168
1281	LF 93	3	1-dimethylamino-2-propanol	74,106,152	NE168
1298	LF-88	3	2-dimethylaminoethanol	88,116,131	NE96
1320	O-744	28	phenethyl alcohol	96,111,138	NE72
1326	O-755	28	hexadecanol	94,120,163	NE45
1424	O-1169	28	4-methylcyclohexanol	93,129,138	NE140
1510	SBP-63-P RRP 382	10	1-piperidino-2,3-propanediol	149,149 215	NE96 D<113
1513	SBP-70-P RS 2180	10	2-dimethylaminoethanol	107,145,167	NE96
1514	SBP-71-P RS 2097	10	1-(o-methoxyphenoxy)-2,3-propanediol	138,156,213	NE96

Alcohols

Laboratory Accession Number	Submitter's Chemical Number	Submitter	Chemical Name	Dose Mg/Kg	Effect & Time
1519	SBP-96-P RS 2108	10	2-cyclohexylcyclohexanol	65,97,162	NE45
1523	SBP-125-P RS 2195	10	3-(o-chlorophenoxy)-1,2-propanediol	84,114,193	NE45
1531	SBP-140-P RS 2227	10	3-(2-naphthyloxy)-1,2-propanediol	76,97,201	NE44
1527	SBP-123-P RS 2118	10	4-cyclohexylcyclohexanol	130,146,204	NE44
1568	1504	58	dichlorobenzyl alcohol mixture	64,223,223	NE47
1576	179	3	2-(p-chlorophenoxy)ethanol	57,139,176	NE68
1606	1851	28	1,3-propanediol	55,114,211	NE120
1610	1898-a	28	1,2-propanediol	78,137,226	NE96
1616	0-1954	28	2-(2-butoxyethoxy)ethanol	49,93,119	NE96
1619	0-1990-a	28	polymerized vinyl alcohol	95,98,155	NE46
1620	0-1991	28	polyvinyl alcohol	86,117,118	NE46
1633	0-2103-o	28	2-(X-chloro-Y-ethylphenyl)ethanol	81,82,272	NE46

Alkyl Halides

1291	LF-67	3	carbon tetrabromide	105,249,387	NE120
1557	FORM 9	58	benzyl chloride	107,149,176	NE44

Ethers

ethers

Laboratory Accession Number	Submitter's Chemical Number	Submitter	Chemical Name	Dose Mg/Kg	Effect & Time
228	BIO 5893	9	2-methyl-2-nitropropyl benzyl ether	48,105,112	NE47
270	BIO 5894	9	2-methyl-2-nitropropyl chloromethyl ether	137,178,214	NE45
321	#142	20	1,2,3,4,6,7,8,9-octachlorodibenzo-p-dioxin	186,201	NE96
325	#104	20	allyl (1,4,5,6-tetrachlorobicyclo[2.2.1]hept-5-en-2-yl) methyl ether	89,119,139	NE96
369	O-548	28	2,4-dinitro-5-methylaniscle	91,129 129	NE46 S2:10,D44
381	O-1020	28	x,x,x-trichlorodiphenyl ether (x means position of Cl group unknown)	185,226	NE46
674	558	28	p-menth-1-en-?-yl ethylene glycol ether ("TERPOSOLE NO. 8")	89,121,138	NE48
1569	1522	58	2,4-dichlorobenzyl ether; remainder 3,4,2,5-, and 2,6-dichlorobenzyl alcohol	73,157 145	NE48 D46
1611	1901	28	sodium glycolate cellulose	60,77,93	NE120
2151	LF 195	3	bis(2-bromoethyl)ether	117,130,133	NE43
620	O-688	28	ethyl ether cellulose	19,23,32	NE72
1561	FORM 14	58	benzyl ether	79,148,153	NE44

m- and p-dioxanes

Laboratory Accession Number	Submitter's Chemical Number	Submitter	Chemical Name	Dose Mg/Kg	Effect & Time
217	N-5904	9	5-hydroxymethyl-2-phenyl-5-nitro-m-dioxane	103,116,145	NE46
219	N-5903	9	2-(2-carbethoxyethyl)-5-ethyl-2-methyl-5-nitro-m-dioxane	131,136,143	NE46
230	BIO 5906	9	5-amino-5-methyl-m-dioxane	74,93,162	NE47
233	BIO 5918	9	5-amino-5-ethyl-2-phenyl-m-dioxane	95,106,132	NE44
237	BIO 5912	9	5-amino-5-ethyl-2-(1-ethylpentyl)-m-dioxane	58,102,104	NE44
242	BIO 5916	9	5-amino-2,5-diethyl-2-methyl-m-dioxane	65,105,123	NE96
247	BIO 5902	9	5-ethyl-2-(1-ethyl-1-pentenyl)-5-nitro-m-dioxane	89,97,133	NE96
248	BIO 5900	9	2,2-diphenyl-5-methyl-5-nitro-m-dioxane	89,122,142	NE96
250	BIO 5909	9	5-benzylideneimino-5-methyl-m-dioxane	89,110,121	NE72
251	BIO 5917	9	5-amino-5-hydroxymethyl-2-phenyl-m-dioxane	56,146 165 178 183	NE72 D<20 S<18,R<186 SO:50,D<20
252	BIO 5911	9	5-(2-ethylhexylideneimino)-5-methyl-m-dioxane	79,87,92	NE72
253	BIO 5899	9	2-p-chlorophenyl-5-methyl-5-nitro-modioxane	89,127,192	NE72
259	BIO 5910	9	5-benzylamino-5-methyl-m-dioxane	127,143,145	NE47
262	BIO 5898	9	5-methyl-5-nitro-m-dioxane	135,185,228	NE43
271	BIO 5905	9	5-nitro-2-phenyl-m-dioxane	59,97,120	NE45
272	BIO 5915	9	5-amino-5-ethyl-m-dioxane	87,133	NE46
274	N-5921	9	5-amino-5-hydroxymethyl-2-propyl-m-dioxane	118,148,165	NE42
1027	1055	28	p-dioxane	99,134,167	NE72
1269	LF 98	3	2,2-dichloro-p-dioxane	40,122,240	NE168

Laboratory Accession Number	Submitter's Chemical Number	Submitter	Chemical Name	Dose Mg/Kg	Effect & Time
402	LF-19	3	chloroacetic acid	177 191 196	S1:10,D<23 S25,D28 D<54
403	LF-20	3	bromoacetic acid	222 277 326	S1:20,D5 D<2:20 S<1:15,D1:30
838	N-563	9	(ethylenedinitrilo)tetraacetic acid	161,212,217	NE96
1056	1371	28	2-ethylhexanoic acid	88,109,117	NE45
1560	FORM 12	58	cinnamic acid	84,113,130	NE43
396	LF-13	3	2,4,5-trichlorophenoxyacetic acid ("2,4,5T")	158,176	NE120
925	S-5712	18	sodium isoascorbate	173,180,262	NE44
930	S-5611	18	citric acid	148,250,300	NE42
945	S-571	18	isoascorbic acid	107 198,266	D<72 NE117
1371	LF-126	3	iodoacetic acid	83 168 397	D<18 S1:25,D<18 S1:30,D3:10
1376	LF-131	3	2,3-dibromopropanoic acid	191,197 480	D<67 S<19,D<67
1345	910	28	3,4-dihydro-2,2-dimethyl-4-oxo-2H-pyran-6-carboxylic acid	115,162,165	NE66
1398	LF-143	3	dichloroacetic acid	82,93,123	NE96
1399	LF-144	3	trichloroacetic acid	88,109,336	NE66
1400	LF-145	3	2-chloropropanoic acid	53,140,237	S4:30,R<94

carboxylic acids

Laboratory Accession Number	Submitter's Chemical Number	Submitter	Chemical Name	Dose Mg/Kg	Effect & Time
1407	LF-152	3	2-bromopropanoic acid	69 65 154	NE91 S≤91 S3-91
1409	LF-154	3	2,2-dichloropropanoic acid	47,103,229	NE92
1555	FORM 5	58	benzilic acid	64,100,160	NE45
1572	63	58	nitrilotriacetic acid	72,119,135	NE46
1607	1854-a	28	cyclohexanecarboxylic acid	93 181,185	S3:30,R≤94 NE94
1627	O-2065-g	28	undecenoic acid	55,71,122	NE47
1630	O-2073-b	28	heptanoic acid	43,73,115	NE47
2108	1078-46	37	2,3,6-trichlorophenylacetic acid	60,61,62	NE24

carboxylic acid anhydrides

323	#119	20	1,4,5,6-tetrachlorobicyclo[2.2.1] hept-5-ene-2,3-dicarboxylic acid anhydride	125,157,344	NE91
1307	LF-84	3	maleic anhydride	174,279	NE92

metal salts of carboxylic acids

768	N-581	9	tetrasodium ethylenediamine tetraacetate	156,212,218	NE43
921	S-5023	18	sodium 4-aminosalicylate dihydrate	205,237	NE44
1001	1638	28	magnesium stearate	127,147 152	NE70 D<70
1011	1335	28	calcium stearate	71,117,121	NE44

metal salts of carboxylic acids

Laboratory Accession Number	Submitter's Chemical Number	Submitter	Chemical Name	Dose Mg/Kg	Effect & Time
1408	LF-153	3	sodium trichloroacetate ("SODIUM TCA")	85,145,222	NE66
1410	LF-155	3	sodium 2,2-dichloropropanoate	63,129,135	NE66
1566	WFR	58	copper phenylacetate	63,90,98	NE46
1574	91258	58	copper (II) aminoacetate	87,103,111	NE46
1712		58	potassium phenylacetate	109,127,142	NE120
329	73386	38	copper naphthenate 80%, 20% petroleum distillate ("NUODEX COPPER, 8%")	76,123	NE72
331	74519	38	mixture of zinc naphthenate (38.5%); 4-dehydro-abietylamine (44.3%) inert ingredients 17.2% ("FUNGITROL 50")	49,80,145	NE72
332	74463	38	zinc naphthenate 70%, petroleum distillate 30% ("NUODEX ZINK, 8%")	47,54,93	NE72
334	75019	38	phenyl mercury acetate 30%, inert ingredients 69% ("NUODEX PMA - 18")	72,144,164	NE69
335	75018	38	di(phenylmercuric)dodecenyl succinate 21%, inert ingredients 79% ("SUPER AD-IT")	94,102,127	NE69
966	905	28	copper oleate	118,133,270	NE43
972	1515	28	aluminum stearate	58,131,144	NE67

lactones

797	N-589	9	Cu (II) thioglycolic 2-amino-8-(hydroxymethyl)-1-naphthoic acid γ-lactone	48,52,73	NE90
1023	1464	28	dehydroacetic acid	218,322,415	NE70
1323	0-751	28	4-hydroxyundecanoic acid lactone	35,46,209	NE66

metal salts of dithiocarbonic acids

Laboratory Accession Number	Submitter's Chemical Number	Submitter	Chemical Name	Dose Mg/Kg	Effect & Time
380	0-988	28	zinc dimethyldithiocarbonic acid	78,86,116	NE42

amino acids

1311	LF-115	3	dl-N-acetylanaline	94,113 198	NE91 D<18

thiolic acids

2180	LF 217	3	nonanethiolic acid	44,58,137	NE72

arsonic acids

81		25	3-nitro-4-hydroxybenzenearsonic acid	171,195,249	NE22
82		25	p-nitrobenzenearsonic acid	95,138,159	NE22
60		15	benzylarsonic acid	33,78,146	NE24

Esters

carboxylates

86		25	dibutyltin dilaurate	102,172,180	NE25
87		25	dibutyltin maleate	87,144,241	NE24
224	BIO 5859	9	2-dimethylamino-2-methylpropyl octanoate	73,81,132	NE43
257	N-5934	9	2-ethyl-2-nitro-1,3-propanediol dioctadecanoate	65,96,102	NE47
268	N-5935	9	2-methyl-2-nitro-1,3-propanediol dioctadecanoate	44,66,67	NE45
290	BIO 5853	9	2-nitro-2-methylpropyl octanoate	57,106,123	NE120

carboxylates

Laboratory Accession Number	Submitter's Chemical Number	Submitter	Chemical Name	Dose Mg/Kg	Effect & Time
291	BIO 5857	9	2-ethyl-2-nitro-1,3-propanediol dipropancate	91,94,139	NE120
292	BIO 5860	9	2-dimethylamino-2-methyl-1,3-propanediol dipropanoate	99,105,107	NE45
311	MA-16	7	diethylaminoethyl fluoren-9-one-2-carboxylate	48 91 92	D<17 S1,R<41 NE41
314	#110	20	1,2,3,4-tetrachlorobicyclo[2.2.1]hept-2-en-5-yl acetate	139,158 242	NE41 D<17
336		4	ethyl 4,4'-dichlorobenzilate (25%); inert ingredients (75%) ("CHLOROBENZILATE 25W")	299,405	NE69
354	0-9	28	butyl 3,4-dihydro-2,2-dimethyl-4-oxo-2H-pyran-6-carboxylate ("INDALONE")	83,107,138	NE69
362	0-337	28	dl-dibutyl malate	116,127	NE48
376	0-667	28	ethyl cinnamate	55,131 113	NE44 D<44
387	0-1451	28	triethylene glycol ester of 1-ethylhexanoic acid	89,92,137	NE44
449		2	octyl lactate	75,81,119	NE42
463		2	1-methylhexyl lactate	88,131,151	NE47
465		2	2,4-dichlorophenoxyethyl lactate	196,216,242	NE46
619	0-660	28	butyl oleate	79,99,113	NE70
622	0-239	28	bis-(2-ethylhexyl)sodium sulfosuccinate	242,292	NE69
624	0-657	28	ethyl oleate	56,77,118	NE70

carboxylates

Laboratory Accession Number	Submitter's Chemical Number	Submitter	Chemical Name	Dose Mg/Kg	Effect & Time
637	0-242	28	2-(2-butoxyethoxy)ethyl acetate	104,142 134	NE66 D<60
638	0-666	28	dibutyl succinate	139,146,206	NE66
639	0-661	28	glyceryl triacetate ("TRIACETIN")	122,148,184	NE66
657	576	28	iso-pentyl acetate	95,114,124	NE43
658	668	28	dimethyl adipate	89,109,122	NE43
673	71	28	sucrose octaacetate	119,154,193	NE52
675	612	28	spermaceti (chiefly cetyl palmitate)	65,148 158	NE52 D1:15
700	170	28	2-(2-butoxyethoxy)ethyl acetate	103,116,135	NE94
713	647	28	methyl undecanoate	70,90,94	NE68
723	LF 57	3	pentachlorophenyl acetate	138,220,333	NE42
772	N-5987	9	2-chloro-2-nitro-1,3-propanediol diacetate	158,190,214	NE42
794	N-5988	9	2-chloro-2-nitrobutyl oleate	75,117,125	NE113
851	N-3669	9	2-methyl-2-nitro-1,3-propanediol dipropanoate	90,101,139	NE71
867	N-3666	9	2-chloro-2-nitrobutyl stearate	119,226,23	NE46
868	N-3660	9	methallyl acetate	92,94,120	NE46
870	N-3668	9	2-methyl-2-nitropropyl oleate	128,144,149	NE44
871	N-3667	9	1-(1-chloro-1-nitroethyl)heptyl acetate	142,171,184	NE44
879	LF 45	3	5-bromosalicyl acetate	91,146,180	NE46

carboxylates

Laboratory Accession Number	Submitter's Chemical Number	Submitter	Chemical Name	Dose Mg/Kg	Effect & Time
905	S-5729	18	acetyl triallyl citrate	77,79,92	NE68
957	1643	28	ethyl mandelate	66,145,154	NE48
958	980	28	tribenzyl citrate	137,137,192	NE48
962	941	28	linalool acetate	124,134,186	NE48
967	1769	28	p-menthane-1,8-diacetate	77,115,126	NE43
968	1747	28	2-(2-hydroxyethoxy)ethyl abietate	105,163,176	NE43
974	910	28	ethyl 3,4-dihydro-2,2-dimethyl-4-oxo-2H-pyran-6-carboxylate	116,203,204	NE43
981	824	28	2-ethoxyethyl laurate	102,120,124	NE43
989	823	28	2-(2-ethoxyethoxy)ethyl ricinoleate	108,163,193	NE96
992	820	28	2-butoxyethyl laurate	141,157,157	NE96
995	1650	28	phenethyl 2-hydroxy-2-methylpropanoate	182,240,251	NE96
999	1132	28	isopropyl benzoate	133,133,178	NE70
1018	1515	28	aluminum stearate	67,88,156	NE44
1035	972	28	3-hydroxypropyl oleate	112,112,173	NE72
1043	968	28	3-hydroxypropyl laurate	121,130,135	NE72
1054	973	28	sorbital dioleate	121,138,176	NE46
1234	N-1178	9	ethyl 2-[1,4,5,6,7,7-hexachloro-2-methylbicyclo (2.2.1)-5-heptenyl] 3-oxobutanoate	84,144,208	NE72
1299	LF-56	3	ethyleneglycol bis(dichloroacetate)	55,212 70	NE96 D<17

carboxylates

Laboratory Accession Number	Submitter's Chemical Number	Submitter	Chemical Name	Dose Mg/Kg	Effect & Time
1347	932	28	diethyl malate	55,113,138	NE65
1350	967	28	monoricinolein	63,79,175	NE48
1357	1012	28	monoolein	25,54,103	NE46
1363	1095	28	isopropyl myristate	47,94,92	NE44
1530	SBP-132-P RS 2221	10	6-chloropiperonyl chrysanthemummonocarboxylate ("BARTHANE")	86,139,182	NE45
1565	FORM 27	58	diethyl phenylmalonate	80,130,159	NE43
1567	1	58	ethyl 2-acetyl-4-pentenoate	56,111,117	NE46
1559	FORM 11	58	ethyl chrysanthemummonocarboxylate	84,120,168	NE44
1570	13	58	diethyl ethyl(1-methylbutyl)malonate	130,137,163	NE46
1571	42	58	diethyl ethylphenylmalonate	85,131,135	NE46
1573	72148	58	methyl cyanoacetate	157,169,216	NE43
1587	0-16380	28	isopropyl pentachlorophenyl carbonate	83,210,218	NE43
1591	1778	28	cellulose acetate stearate	90,105,148	NE43
1592	1779	28	cellulose acetate	92,136,185	NE44
1593	1784-b	28	methylcellulose	75,76,179	NE44
1594	1787	28	methyl mandelate	75,78,172	NE44
1595	1788	28	isopropyl mandelate	78,110,159	NE44
1596	1789-c	28	butyl mandelate	67,135,192	NE44

carboxylates

Laboratory Accession Number	Submitter's Chemical Number	Submitter	Chemical Name	Dose Mg/Kg	Effect & Time
1618	0-1972-a	28	phenyl acetate	62,64,120	NE46
1621	0-1996-b	28	benzyl acetate	68,130,146	NE44
1622	0-2024-d	28	propyl cinnamate	58,121,193	NE43
1623	0-2026-k	28	isopropyl cinnamate	95,123,129	NE43
482		2	methyl lactate	126,139,147	NE42
648	0-398	28	butyl octadecanoate	52,57	NE46
				91	D<21
978	566	28	glyceryl monostearate	118,133,270	NE43

phosphates

118	997	9	ethylpyrophosphate ("TEPP")	69	S1:15,D2:20
				97	S0:50,D1:45
				206	S0:45,D1
49	BIO 651	9	diethyl (2,2-dichloro-1-ethoxyvinyl)phosphate	1,3,5	NE96
				4	D<16
				11.19	D<17
50	BIO 653	9	diethyl (1,2,2-trichloroethyl) phosphate	0.2,0.3,1.2	S<24,R<143
				0.4	D5
				1	D<17
				1	S<2:30,D4:30
				2	S<2:30,D4
51	BIO 603	9	diethyl (1,2,2,2-tetrachloroethyl) phosphate	5,5.7,7.5	NE46
				4	S<2,D<9:30
				6	S<46,D50
				13	S<2,D<9:30
39		42	dimethyl 1,2-dibromo-2,2-dichloroethyl phosphate ("DIBROM")	178	NE96
				249	S<24,R<48
				180	S47,D<168
				220	S47,D<68
				269	D<17

phosphates

Laboratory Accession Number	Submitter's Chemical Number	Submitter	Chemical Name	Dose Mg/Kg	Effect & Time
40		42	dimethyl dichlorovinyl phosphate ("DDVP")	71,205 78 240	NE96 S0:40,D<17 S1:15,D2
46	BIO 633	9	diethyl(1,2-dichloroethyl)phosphate	0.6,1.2,2 <2,<2,2	NE48 D<17
226	BIO 5856	9	tris(2-methyl-2-nitropropyl) phosphate	143,161,165	NE46
338	ML-97	42	49% 1-chloro-1-diethylcarbamoyl-1-propen-2-yl dimethyl phosphate; 51% isopropyl alcohol ("PHOSPHAMIDON")	58,59 90	NE43 S<1,R<43
608		2	diethyl phosphoro-N^2-phenylhydrazidate	192,209 187	NE41 D<40
609		2	diethyl phosphoro-N-(m-chlorophenyl)phosphate	94,124,173	NE90
634	O-653	28	triethyl phosphate	62,133,158	NE67
685	520	28	tris(o-tolyl)phosphate	78,129,136	NE95
741	N-608	9	bis(2-chloroethyl) 1,2,2,2-tetrachloroethyl phosphate	128,147,151	NE42
742	N-609	9	diethyl 3-carbethoxy-3-chloro-2-ethylpropyl phosphate	23,136,166 43,93,96,130	NE43 D<16
745	N-371	9	ethyl 2,2-dichlorovinyl 4-nitrophenyl phosphate	116,125 149	NE72 S<41,D<65
752	N-300	9	2,2-dichlorovinyl diethyl phosphate	135 134 153	NE66 D<41 S<17,R<66

phosphates

Laboratory Accession Number	Submitter's Chemical Number	Submitter	Chemical Name	Dose Mg/Kg	Effect & Time
754	N-369	9	2,2-dichloro-1-diethylaminovinyl dimethyl phosphate	96,104 71	NE47 S3:30-47
757	N-399	9	1,2-dicarbobutoxy-2-chloroethyl 2,2-dichlorovinyl methyl phosphate	<50,<50,<50	NE46
762	N-403	9	diethyl phenylazo phosphate	85 89 122	S1:20,D2:20 D1:20 S1:20,D2:20
763	N-357	9	1-chloro-2-propenyl diethyl phosphate	121,158,188	NE44
767	N-344	9	2,2-dichlorovinyl bis-2-ethoxyethyl phosphate	21,69,104 128 136 138	NE48 S2,D3:30 D<18 S1:45,D4:25
776	N-386	9	3-chloropropyl 2,2-dichlorovinyl ethyl phosphate	141 298 96,211	NE115 S3:30,R<48 D<19
778	N-351	9	2,2-dichloro-1-phenylvinyl diethyl phosphate	127,144,150	NE115
779	N-346	9	bis-(2-methoxyethyl) 2,2-dichlorovinyl phosphate	89,167,206	NE42
811	N-601	9	1-cyclohexenyl diethyl phosphate	5,6,10 22,44	NE44 D<20
812	N-604	9	diethyl 2-methyl-1-propenyl phosphate	81,148 132	NE46 D<45
813	N-606	9	2-carbethoxy-1-methylvinyl diethyl phosphate	47,62,95 84,144,168	NE42 D<18
818	N-610	9	diethyl 2,2-dichloro-1-(dichlorocarbethoxymethyl) vinyl phosphate	123,125 72	NE72 D<65
819	N-617	9	bis(2-chloroethyl) 1,2-dibromo-2,2-dichloroethyl phosphate	137,197,213	NE66

phosphates

Laboratory Accession Number	Submitter's Chemical Number	Submitter	Chemical Name	Dose Mg/Kg	Effect & Time
823	N-630	9	diethyl 2-propenyl phosphate	89,119 171	NE42 S<17,D<40
827	N-626	9	2,2-dichlorovinyl bis-(2-isopropoxy-1-isoproxymethylethyl) phosphate	96,97,102	NE43
842	N-637	9	1,2-dibromo-2,2-dichloroethyl dipropyl phosphate	123,136,250	NE94
843	N-639	9	1-chloromethyl-1-chloroethyl diethyl phosphate	75,172,200 121 173 245	NE94 D<93 S<4,D4:45 S2:35,D3:30
848	N-631	9	chlorinated tri-n-butyl phosphate (isomer mixture)	59,83,97	NE90
849	N-640	9	dichloroformaldehyde oxime diethyl phosphate	108,167,188	NE90
858	N-396	9	1,2-dibromo-2,2-dichloroethyl diethyl phosphate	140,170,170	NE67
862	N-642	9	1,2-dibromo-2-methylpropyl diethyl phosphate	176,188 127	NE90 S<66,D70
863	N-643	9	1,2-dibromo-1-chloromethylethyl diethyl phosphate	152,298 113 250	NE91 S72,D<90 S<23,D144
874	N-641	9	bis[2-(2-methoxyethoxy)ethyl] 1,2-dibromo-2,2-dichloroethyl phosphate	122,200 175	NE44 S<1,R<44
876	LF 11	3	triphenyl phosphate	130,143,147	NE46
877	LF 43	3	tri-o-cresyl phosphate	56,129,147	NE44
889	S-5486	18	diethylstilbestrol 4,4'-diphosphate	96,131,205	NE42
1057	N-644	9	diisobutyl 1,2-dibromo-2,2-dichloroethyl phosphate	201,213,254	NE44

phosphates

Laboratory Accession Number	Submitter's Chemical Number	Submitter	Chemical Name	Dose Mg/Kg	Effect & Time
1058	N-645	9	bis(tetrahydrofurfuryl) 1,2-dibromo-2,2-dichloroethyl phosphate	126,242,282	NE44
1059	N-646	9	bis(1-carbethoxyethyl) 1,2-2,2-dichlorethyl phosphate	148,159,214	NE43
1060	N-647	9	bis(butoxyethyl) 1,2-dibromo-2,2-dichloroethyl phosphate	210,228,250	NE43
1061	N-650	9	bis(2-ethylhexyl) 1,2-dibromo-2,2-dichlorethyl phosphate	128,199,214	NE43
1062	N-654	9	1,2-dibromo-2-chloro-2-carbethoxy-1-methylethyl diethyl phosphate	17,50,88 64,142	NE120 S<4,D<5
1063	N-655	9	1,2-dibromo-2,2-dichlorethyl ethylene phosphate	35,51,74 98 159	NE120 S<48,D<72 D<18
1064	N-656	9	bis(2-chloroethyl) 1,2-dibromo-2,2-dichlorethyl phosphate	122,172,196	NE42
1065	N-657	9	bis(2-chloroethyl) 1,2,2,2-tetrachloroethyl phosphate	174,204,224	NE42
1066	N-658	9	1,2-dibromo-2,2-dichloroethyl trimethylene phosphate	202,313,360	NE42
1067	N-659	9	1,2-dibromo-2,2-dichloroethyl 1-ethyl-2-methyl-trimethylene phosphate	231,247,251	NE42
1068	N-666	9	2-carbethoxy-1-ethoxyvinyl diethyl phosphate	14,28,100 48,64 252	NE49 D3:30 S0:35,D1:20
1069	N-667	9	2-bromo-2-carbethoxy-1-ethoxyvinyl diethyl phosphate	89,141 195	NE41 D<16
1070	N-668	9	1-ethoxy-2,2,2-trichloroethyl diethyl phosphate	264 177,200 224,224	NE41 D<22 D<17

phosphates

Laboratory Accession Number	Submitter's Chemical Number	Submitter	Chemical Name	Dose Mg/Kg	Effect & Time
1071	N-669	9	diethyl 2,2,2-trichloro-1-phenylethyl phosphate	68,71,99 117,145,157	NE48 D<47
1072	N-670	9	diethyl 2-nitro-1-(trichloromethyl)ethyl phosphate	107,184,217	NE46
1073	N-671	9	tetraethyl 2,2-dichlorovinyl tripolyphosphate	146,210,238	D1:30
1074	N-672	9	1-chloro-2-bromoethyl phosphate	206,232,339	NE40
1079	N-687	9	bis-2-chloroethyl vinyl phosphate	127,158,167	NE44
1080	N-688	9	bis-2-chloroethyl 2-chlorovinyl phosphate	124,206,262	NE44
1081	N-689	9	bis-2-chloroethyl 1,2-dibromoethyl phosphate	181,262,305	NE44
1082	N-690	9	bis-2-chloroethyl 1,2-dibromo-2-chloroethyl phosphate	248,271 336	NE44 D<43
1083	N-691	9	bis-2-chloroethyl 1,2,2-trichloroethyl phosphate	56,63,130 186,202,262	NE48 S3,D<19
1084	N-692	9	diethyl 4,4-dichloro-1-phenyl-1,3,butadienyl phosphate	77,206,253	NE43
1086	N-696	9	diethyl 1,2-dicarbethoxyvinyl phosphate	41,45,72 83,133,238	NE48 S0:45,D1:45
1087	N-697	9	2,2-dichlorovinyl bis-(9-carbobutoxy-2-chloro-1-octylnonyl) phosphate	73,125,188	NE43
1088	N-700	9	cyanomethyl diethyl phosphate	130,133,155	NE43
1127	N-776	9	diethyl 1-trichloromethylcyclohexyl phosphate	93,94,141 243,243,340	NE48 S1:30,D3:30
1128	N-778	9	bis-(2-ethylmercaptoethyl)2,2-dichlorovinyl phosphate	80,115,180	NE92
1132	N-795	9	2-(2,2-dichlorovinyloxy)-1,3,2-dioxaphosphorolane-2-oxide	172,225,272	NE92

phosphates

Laboratory Accession Number	Submitter's Chemical Number	Submitter	Chemical Name	Dose Mg/Kg	Effect & Time
1133	N-796	9	2-chloroethyl 2-chlorovinyl ethyl phosphate	122,152,232	NE92
1134	N-797	9	2-chloroethyl 2-chlorovinyl methyl phosphate	181,197,209	NE91
1135	N-798	9	2-(2-chlorovinyloxy)-4-methyl-1,3,2-dioxaphosphorolane-2-oxide	156,170,226	NE91
1136	N-799	9	2-chloropropyl 2-chlorovinyl methyl phosphate	92,135,169	NE91
1138	N-803	9	2-chlorovinyl di-n-propyl phosphate	81,131,170	NE91
1139	N-805	9	2-chlorovinyl bis(2-ethylhexyl) phosphate	87,111,147	NE90
1140	N-807	9	bis-2-ethylhexyl 1,2,2-trichloroethyl phosphate	120,124,141	NE90
1141	N-808	9	bis-2-ethylhexyl 1,2-dibromo-2-chloroethyl phosphate	168,191,198	NE90
1142	N-809	9	dibutyl 1,2-dibromo-2-chloroethyl phosphate	193,207,215	NE72
1143	N-810	9	dibutyl 1,2,2-trichloroethyl phosphate	130,144,180	NE72
1144	N-811	9	dipropyl 1,2-dibromo-2-chloroethyl phosphate	200,246 256	NE70 D<22
1145	N-812	9	dipropyl 1,2,2-trichloroethyl phosphate	56,171,187 133,289	NE69 D<21
1146	N-813	9	diisopropyl 1,2-dibromo-2-chloroethyl	142,214,239	NE71
1174	N-877	9	dibutyl 2,2-dichloro-1-ethoxyvinyl phosphate	87,104,180 115,120 103	NE96 D20 S<20,R<24
1175	N-878	9	bis-2-ethylhexyl 2,2-dichloro-1-ethoxyvinyl phosphate	44,108,115 24 97,102,103	NE72 D<52 D20

phosphates

Laboratory Accession Number	Submitter's Chemical Number	Submitter	Chemical Name	Dose Mg/Kg	Effect & Time
1176	N-879	9	diethyl 2,2-dichloro-1-methoxyvinyl phosphate	63,78,118 103 103 188	NE95 S<20,R<24 D20 SO:50,D<20
1177	N-890	9	diethyl 1,2,2-tris-carbethoxyisopropyl phosphate	173,192,255 132 142,180	NE96 S<20,R<24 D20
1178	N-891	9	diethyl 1,2,2-tris-chloroethyl phosphate	4,5,6 5,8 7	NE48 S<4,D<22 D168
1179	N-893	9	diethyl 1,2-dichloroethyl phosphate	2,4,6 4 5,6	NE168 D<4 D<17
1185	N-930	9	diethyl trichloro-2-methylpropyl phosphate (mixture)	68,117,173	NE42
1190	N-942	9	diethyl trichloro-2-methylpropyl phosphate (mixture)	123,139,208	NE95
1188	N-938	9	diethyl chloro-2-methylpropyl phosphate (mixture)	90,111,167	NE42
1189	N-941	9	diethyl dichloro-2-methylpropyl phosphate (mixture)	137,155 171	NE96 D<23
1219	N-1179	9	diethyl 1-(4-chlorophenyl)vinyl phosphate	128,147,286	NE69
1246	N-939	9	diethyl dichloro-2-methylpropyl phosphate (mixture)	78,210,237	NE72
1280	LF 79	3	tris(2-chloroethyl) phosphate	35,125,156	NE144
1297	LF-69	3	bis(o-chlorophenyl)phenyl phosphate ("PHOSPHEN 4")	121,155,158	NE120
1181	N-906	9	diethyl 2,2-dichloro-1-trichloromethylvinyl phosphate	137,204 187	NE43 D17:45

phosphates

Laboratory Accession Number	Submitter's Chemical Number	Submitter	Chemical Name	Dose Mg/Kg	Effect & Time
1158	N-848	9	dichloroethyl diethyl phosphate	1 2 4 3 4 6	NE168 S3,R<168 S5,R<168 D72 D30 S<3,D3:30

phosphinates

1155	N-844	9	chlorovinyl diphenylphosphinate	141,192,192	NE68

phosphonates

210		44	dimethyl 2,2,2-trichloro-1-hydroxyethylphosphonate ("DIPTEREX")	177,204,225	NE43
753	N-308	9	2,2-dichlorovinyl methyl phenylphosphonate	80,111 81	NE47 S29,R<47
758	N-404	9	di-n-butyl α-hydroxy-2,4-dichlorobenzylphosphonate	172,175,251	NE46
766	N-377	9	2,2-dichlorovinyl ethyl propanephosphonate	79,108,146	NE43
769	N-341	9	diethyl 2,2,2-trichloro-1-oxoethylphosphonate	7,10,10 20 41	NE48 D4:30 D<24
771	N-407	9	phenyl 2-propenyl phosphonate	93,106,134	NE42
782	N-405	9	tetrabutyl 1,2,4,5-tetrachloro-3,6-dihydroxy-1,4-cyclohexadiene-3,6-diphosphonate	133,135,241	NE43
1076	N-684	9	2-(1-methoxyethoxy)ethyl vinyl benzenephosphonate	158,162,220	NE46
1077	N-685	9	2-(1-methoxyethoxy)ethyl 1,2-dibromoethyl benzenephosphonate	113,115,178	NE46

phosphonates

Laboratory Accession Number	Submitter's Chemical Number	Submitter	Chemical Name	Dose Mg/Kg	Effect & Time
1078	N-686	9	2-(1-methoxyethoxy)ethyl 1,2-dichloroethyl benzenephosphonate	174,204,252	NE44
1120	N-758	9	diethyl 1-cyanothenylphosphonate	106,196 240	NE96 S2,D5
1137	N-801	9	2-chlorovinyl ethyl benzenephosphonate	121,145,248	NE91
1170	N-867	9	ethyl p-nitrophenyl 2-thienylphosphonate	47,169,178	D<21
1172	N-870	9	bis-2-chloroethyl 1-ethoxy-2,2-dichlorovinyl phosphate	136,150 197	NE48 S<21,D26
751	N-401	9	di-n-butyl a-hydroxybenzylphosphonate	82,140,197	NE66
1075	N-675	9	2-(1-methoxyethoxy)ethyl vinyl benzenephosphonate	3,12,17 3,4 3,52,53	NE72 S3:30,R<72 D<3:30
1156	N-846	9	dichlorovinyl ethyl 2-thienylphosphonate	158,162,175	NE67
1157	N-847	9	dichlorovinyl ethyl p-chlorophenylphosphonate	170,218,247	NE67
761	N-406	9	hexethyl s-triazine-2,4,6-triphosphonate	125,128 120	NE47 S3:20,R<47

phosphonothionates and phosphorothionates

1169	N-865	9	ethyl p-nitrophenyl ethylphosphonothionate	66,84,142 74,99,107	NE96 D<22
31		4	0,0-diethyl 0-[6-(4-methyl-2-isopropylpyrimidinyl)] phosphorothionate ("DIAZINON 25W")	42,60,72	NE18
32		4	0,0-diethyl 0-[6-(4-methyl-2-isopropylpyrimidinyl)] phosphorothionate ("DIAZINON 25E")	59,91,92	NE72

phosphonothionates and phosphorothionates

Laboratory Accession Number	Submitter's Chemical Number	Submitter	Chemical Name	Dose Mg/Kg	Effect & Time
461		2	dipropyl N-(3-chlorophenyl)phosphoramidothionate	94,101,120	NE47
1173	N-876	9	bis-p-nitrophenyl methylphosphonothionate	61,72,80 51 79 156	NE48 D<40 D22 D5

phosphorothioates and phosphorodithioates

1208	N-1133	9	0,0-dialkyl S-(1-butoxyethyl) phosphorodithioate (ethyl/isopropyl is 1:1)	99,123 87	NE90 D<90
1209	N-1181	9	0,0-diethyl S-phenacyl phosphorodithioate	76,144,195	NE90
1220	N-1184	9	0,0-diethyl S-[3-ethylthio-2-hydroxypropyl] phosphorodithioate	126,129,163	NE90
1221	N-1189	9	0,0-diethyl S-(2-carboxyethyl)phosphorodithioate	45,199,253	NE93
1222	N-1166	9	0,0-bis(2,3-diacetoxypropyl) S-(3-chloro-2-hydroxypropyl)phosphorodithioate	81,130,130	NE92
1233	N-1175	9	0,0-diethyl S-diphenylmethyl phosphorodithioate	66,159,169	NE91
1239	N-1164	9	0,0-diethyl S-(2,3-diacetoxypropyl)phosphorodithioate	76,108,171	NE90
1240	N-1177	9	0,0-diethyl S-(2-phenyl-2-hydroxyethyl) phosphorodithioate	77,100,104	NE66
116	713	9	S-(1,2-dicarbethoxyethyl) 0,0-diethyl phosphorodithioate ("MALATHION")	40,62,218	NE21
117	208	9	S-(1,2-dicarbethoxyethyl) 0,0-diethyl phosphorodithioate ("MALATHION," 25% wettable)	75,85,116	NE19

phosphorothioates and phosphorodithioates

Laboratory Accession Number	Submitter's Chemical Number	Submitter	Chemical Name	Dose Mg/Kg	Effect & Time
209		44	0,0,dimethyl S-4-oxo-1,2,3-benzotriazin-3(4H)ylmethyl phosphorodithioate ("GUTHION")	192,253,385	NE24
1224	N-1123	9	0,0,diethyl S-(2-acetoxyethyl)phosphorodithioate	125,147,154	NE68
1130	N-782	9	A complex of 2 moles of cuprous 0,0-di-2-propyl phosphorodithioate with 1 mole of cuprous chloride	391 348 384	NE96 S2,R<96 D<46
1147	N-817	9	A complex of 2 moles of cuprous chloride with 1 mole of cuprous 0,0-dimethyl phosphorodithioate	115,297 387	NE70 D<22
1191	N-981	9	A complex of 1 mole of bis(diethoxyphosphino-thioyl) disulfide with 1 mole of manganese 0,0-di-2-propyl phosphorodithioate	107,176 222	NE96 S3:20,R<95
1192	N-982	9	A complex of 1 mole of bis(diethoxyphosphinothioyl) disulfide with 1 mole of ferric 0,0-di-2-propyl phosphorodithioate	90,127,205	NE96
883	LF 49	3	0,0-dimethyl 0-(2,4,5-trichlorophenyl) phosphorothioate ("VIOZENE")	150,162,284	NE41
1104	N-729	9	tetraethyl S,S'-thiocarbamoyl bis-phosphorothioate	68,144,229	NE45
109	40	9	0,0-diethyl 0-p-nitrophenyl phosphorothioate ("PARATHION")	61,71,189	NE20
136	66	9	0,0-diethyl 0-p-nitrophenyl phosphorothioate ("PARATHION" 15% wettable)	223,295,460 89,157	NE192 S<22,D>28
211		44	0,0-diethyl 0-(3-chloro-4-methyl-7-coumarinyl) phosphorothioate ("CO-RAL")	58,104,119	NE42
1085	N-694	9	tetraisopropyl S,S'-carbonyl bis-phosphorodithioate	157,182,182	NE43

phosphorothioates and phosphorodithioates

Laboratory Accession Number	Submitter's Chemical Number	Submitter	Chemical Name	Dose Mg/Kg	Effect & Time
1089	N-703	9	tetraethyl S,S'-thiocarbamoyl bis-phosphorodithioate	54,97 130	NE42 D<17
1090	N-704	9	tetra-sec-butyl S-thiocarbamoyl bis-phosphorodithioate	104,168 110	NE42 SO:30,R<42
1091	N-705	9	tetrakis-(1,3-dimethylbutyl) S,S'-thiocarbamyl bis-phosphorodithioate	112,137,189	NE42
1092	N-706	9	tetramethyl S,S'-thiocarbamoyl bis-phosphorodithioate	172,172,185	NE42
1093	N-707	9	tetrakis-(2-methyl-2-nitroisopropyl) S,S'-thiocarbamoyl bis-phosphorodithioate	144,155,232	NE118
1094	N-708	9	tetraethyl S,S'-carbamoyl bis-phosphorodithioate	116,148 128	NE41 D<16
1095	709	9	tetraphenyl S,S'-carbamoyl bis-phosphorodithioate	77,192	NE42
1096	N-714	9	O-chloroethyl O,O-bis(diisopropyl)thiophosphoryl phosphorodithioite	158,193,248	NE48
1097	N-715	9	O-ethyl O,O-bis(diisopropyl)thiophosphonyl phosphorodithioite	187,195,224	NE44
1098	N-718	9	tetraisopropyl S,S'-oxalyl bis-phosphorodithioate	97,139,181	NE46
1099	N-720	9	tetrakis(2-phenoxyethyl) S,S'-barbamoyl bis-phosphorodithioate	63,121,214	NE118
1100	N-721	9	tetrakis (2-acetoxyethyl) S,S'-carbamoyl bis-phosphorodithioate	110,124,220	NE118
1101	N-726	9	tetrakis (2-chloroethyl) S,S'-carbamoyl bis-phosphorodithioate	140,217,254	NE118
1102	N-727	9	tetrakis(carbethoxyethyl) S,S'-carbamoyl bis-phosphorodithioate	133,153,163	NE45

phosphorothioates and phosphorodithioates

Laboratory Accession Number	Submitter's Chemical Number	Submitter	Chemical Name	Dose Mg/Kg	Effect & Time
1103	N-728	9	tetraethyl carbamoyl phosphorodithioate	90,186,225	NE45
1105	N-736	9	0,0-bis(2-carbethoxyethyl) hydrogen phosphorodithioate	132,141,170	NE44
1106	N-737	9	0,0-bis(2-chloroethyl) hydrogen phosphorodithioate	214,224,286	NE44
1107	N-738	9	0,0-bis(2-chloro-1-chloromethylethyl)hydrogen phosphorodithioate	172,210,237	NE44
1108	N-739	9	0,0-diisopropyl hydrogen phosphorodithioate	65,132,152	NE43
1109	N-742	9	tetrapropyl S,S'-carbonyl bis-phosphorodithioate	94,156,204	NE43
1110	N-743	9	tetrapropyl S,S'-thiocarbonyl bis-phosphorodithioate	106,156,170	NE43
1111	N-746	9	tetrakis(1,3-dichloroisopropyl) S,S'-thiocarbonyl bis-phosphorodithioate	110,202,273	NE43
1112	N-748	9	tetrakis[2-(1-methoxyethoxy)ethyl] S,S'-thiocarbonyl bis-phosphorodithioate	90,111,125	NE43
1113	N-749	9	tetrakis[2-(1-methoxyethoxy)ethyl] S,S'-carbonyl bis-phosphorodithioate	135,163,214	NE43
1114	N-750	9	tetratridecyl S,S'-thiocarbonyl bis-phosphorodithioate	85,107,148	NE42
1115	N-751	9	tetratridecyl S,S'-carbonyl bis-phosphorodithioate	95,99,118	NE42
1116	N-752	9	cuprous 0,0-diisopropyl phosphorodithioate	114,200,226	NE96
1117	N-753	9	tetraallyl S,S'-thiocarbonyl bis-phosphorodithioate	117,141,152	NE43
1118	N-754	9	tetraallyl S,S'-carbonyl bis-phosphorodithioate	111,121,200	NE96
1119	N-756	9	tetraisopropyl S,S'-phthaloyl bis-phosphorodithioate	101,165,185	NE96

phosphorothioates and phosphorodithioates

Laboratory Accession Number	Submitter's Chemical Number	Submitter	Chemical Name	Dose Mg/Kg	Effect & Time
1148	N-819	9	cuprous O,O-dimethyl phosphorodithioate	428 97 123 164	NE70 D<162 D<114 S41,D48
1149	N-825	9	bis-ethylenediamine copper (II) tetraisopropyl bis-phosphorodithioate	75,87,126	NE70
1150	N-826	9	iron (II) hexaisopropyl tris-phosphorodithioate	91,215,226	NE70
1159	N-849	9	copper (II) O,O-bis(p-chlorophenyl)phosphorodithioate	99,184 43,150	NE48 D<23
1160	N-850	9	copper(II) O,O-diethyl phosphorodithioate	107,218,347 53 234,329,331	NE48 D<67 D<22
1161	N-851	9	chlorocarbamoyl O,O- dipropyl phosphorodithioate	79,200,212	NE67
1165	N-855	9	copper (II) bis-(2-ethylhexyl) phosphorodithioate	98,139,188	NE66
1214	N-1134	9	O,O-diisopropyl S-(1-butoxyethyl)phosphorodithioate	38,44,115	NE70
1202	N-1132	9	O,O-diethyl S-(1-butoxyethyl)phosphorodithioate	110,133,320	NE92
1204	N-1182	9	O,O-diethyl S-(2-oxopropyl) phosphorodithioate	57,144,192	NE91

phosphoroamidates

1184	N-920	9	1,2-dichloroethyl bis-dimethylphosphoramidate	118,134,179	NE42
459		2	dioctyl N-(3-chlorophenyl) phosphoroamidate	110,110,122	NE47
777	N-352	9	2-chloroethyl 2,2-dichlorovinyl N,N-diethyl phosphoroamidate	151,163,175	NE115

phosphorothiolates and phosphorodithiolates

Laboratory Accession Number	Submitter's Chemical Number	Submitter	Chemical Name	Dose Mg/Kg	Effect & Time
765	N-380	9	0,0-diethyl S-(2,2-dichlorovinyl)phosphorothiolate	67,84,208 268 106,173	NE44 S<49 D<18:30
110	809	9	mixture of 0,0-diethyl O-[2-(ethylthio)ethyl] phosphorothionate and 0,0-diethyl-S-[2-(ethylthio) ethyl] phosphorothiolate ("DEMETON," 26.2%; "SYSTOX")	29,98,119	NE20
1186	N-931	9	O-(1,2-dichloroethyl) S,S'-bis(di-2-propoxy-phosphinothioyl) phosphorodithiolate	101,113,178	NE42
			sulfites and sulfates		
132	433	9	2-(p-tert-butylphenoxy)-1-methylethyl-2-chloroethyl sulfite ("ARAMITE," 15% wettable)	92,106,111	NE27
133	348	9	2-(p-tert-butylphenoxy)-2-methylethyl-2-chloroethyl sulfite ("ARAMITE")	99,129,364	NE22
108	415	9	2-(p-tert-butylphenoxy)-1-methylethyl-2-chloroethyl sulfite ("ARAMITE," 30.4% miscible)	32,59,200	NE22
861	N-554	9	copper (II) bis(1,1,1-trichloro-3-amino-2-propanol) sulfate	131,153,212	NE70
			thiocarbamates and dithiocarbamates		
749	N-557	9	ethyl 3-dimethylaminopropylthiocarbamate	98,106,162	NE44
339		39	aqueous solution of sodium dibutyl dithiocarbamate ("BUTYL NAMATE")	204,221 113	D<17:30 D<15
342		39	90% zinc dimethyl dithiocarbamate 7.8% zinc 2-benzothiazolyl mercaptide ("VANCIDE 51Z")	117,118,139	NE43
343		39	copper dimethyl dithiocarbamate ("CUMATE")	53,107	NE70
345		39	zinc diethyl dithiocarbamate ("ETHYL ZIMATE")	95,115,121	NE70

thiocarbamates and dithiocarbamates

Laboratory Accession	Submitter's Chemical	Submitter	Chemical Name	Dose Mg/Kg	Effect & Time
347		39	bismuth dimethyl dithiocarbamate ("BISMATE")	68,114,114	NE69
348		39	selenium dimethyl dithiocarbamate ("METHYL SELENAC")	54,88 137	NE69 D2:45
349		39	lead dimethyl dithiocarbamate ("LEDATE")	37,64,64	NE69
350		39	zinc dibutyl dithiocarbamate ("BUTYL ZIMATE")	51,67,82	NE69
351		39	zinc dimethyl dithiocarbamate ("METHYL ZIMATE")	48,73,98	NE69
421	LF-38	3	zinc dimethyldithiocarbamate	90,96,102	NE70
781	N-552	9	copper (II) 1,1,1-trichloro-2-hydroxypropyl-dithiocarbamate	137,166,179	NE43
783	N-536	9	copper (II) 3-dimethylaminopropyldithiocarbamate	132 250 210	NE115 S<43,R<115 D<115
788	N-577	9	iron (III) 3-dimethylaminopropyldithiocarbamate	12,47,150 17,138 71,84,142	NE46 S<7,R<95 D<20
789	N-578	9	cadmium 2-dimethylaminopropyldithiocarbamate	207,215,248	NE120
2127		39	Mixture: zinc dimethyldithiocarbamate 77%; 1,8-diaminomenthane 21% ("VANICIDE Zm")	39,64,121	NE46
743	N-556	9	trimethylammonium dithiocarbamic acid iodide	136,166 164	NE43 S24,D28
744	N-555	9	copper (II) bis(ethylenediamine-3-dimethylaminopropyl) dithiocarbamate	74,129,142	NE44

thiocyanates and isothiocyanates

Laboratory Accession Number	Submitter's Chemical Number	Submitter	Chemical Name	Dose Mg/Kg	Effect & Time
636	0-94	28	2-(2-butoxyethoxy)ethyl thiocyanate	79,93 112	NE67 D<60
660	92	28	Mixture of 1,3,3-trimethyl-2-norbornyl(fenchyl) thiocyanate and isobornyl thiocyanate	118,131,135	NE43
959	1125	28	octyl thiocyanate	101,104,143	NE48
1309	LF-96	3	2,4-dinitrophenyl thiocyanate	140,310	NE91
2149	LF 202	3	methanediol thiocyanate	74,96,104	NE44
385	0-1416	28	p-dimethylaminophenyl thiocyanate	164,174,178	NE46
726	LF 60	3	phenyl p-dimethylaminoisothiocyanate	129,187,202	NE45

thiocarbonates, di- and trithiocarbonates

1122	N-762	9	S,S'-bis[di-(1-methylethoxy)phosphinothioyl] thiocarbonate	89,90,127	NE94
1125	N-774	9	S-[bis-(1-methylethoxy)phosphinothioyl] S-(N,N-diethylthionocarbamoyl)trithiocarbonate	161,209,250	NE93
1163	N-852	9	S-(di-1-propoxyphosphinothioyl) S'-(N,N-diethyl-thionocarbamyl) dithiocarbonate	122,145,240	NE66
1167	N-860	9	S-(di-2-butoxyphosphinothioyl) S'-(N,N-diethyl-thionocarbamyl) dithiocarbonate	47,67,82 110,120,160	NE96 D<22
1131	N-791	9	S,S'-bis(diphenoxyphosphinothioyl)trithiocarbonate	88,91,290	NE94

xanthates

Laboratory Accession Number	Submitter's Chemical Number	Submitter	Chemical Name	Dose Mg/Kg	Effect & Time
1438	O-1301	28	ethyl ethylxanthate	118,156,205	NE144
1047	1364	28	potassium ethylxanthate	166,182,210	D<18

carbonates

691	63	28	diphenyl carbonate	122,214,215	NE120
869	N-3659	9	dioctyl carbonate	56,69,89	NE46
1515	SBP-77-P RS 2098	10	bis(o-methoxyphenyl)carbonate	150,182,188	NE94
2220	TD-301	60	O-ethyl-S-pentachlorophenylthiolcarbonate	240 224	S<2:30,R<24 S<2:30,D<70

carbamates

580		2	methyl allophanate	74,179 184	NE46 D<20
427		2	isopropyl N-2-(2,4,4-trimethylpentyl)carbamate	>50,>50,>50	NE67
434		2	isopropyl N-(3-morpholinyl)-N-propylcarbamate	126,132,151	NE46
437		2	isopropyl N-(2-furfuryl)carbamate	138,139,144	NE45
444		2	1-carbobutoxyethyl N-ethylcarbamate	72,96,123	NE43
506		2	isopropyl N-dehydroabietylcarbamate	134,164 123	NE69 S<21,D<35

carbamates

Laboratory Accession Number	Submitter's Chemical Number	Submitter	Chemical Name	Dose Mg/Kg	Effect & Time
509		2	isopropyl N-[2-(5-chloropyridyl)] carbamate	123,128,140	NE70
525		2	1,3-propylene bis-carbamate	103,135,157	NE45
537		2	3,3'-dimethoxydiphenylene bis-(O-isopropyl) carbamate	85,218,389	NE96
579		2	ethyl diphenylcarbamate	155,161,163	NE46
604		2	m-benzene bis-(O-isopropylcarbamate)	147,151,245	NE41
605		2	diphenylene bis-(O-isopropyl carbamate)	97,126,129	NE42
606		2	diethylene glycol bis-carbamate	126,140,243	NE41
607		2	ethylene glycol bis-carbamate	180,181,306	NE41
542		2	1,2-propylene bis-carbamate (dicarbamate ester of 1,3-propanediol)	123,129,145	NE96
852	N-3657	9	didecyl carbamate	85,106	NE70
853	N-3658	9	dimethyl carbamate	80,85,110	NE70
2163		57	1-naphthyl methylcarbamate ("SEVIN")	160,161,184	NE120

carbanilates

426		2	isopropyl N-benzyl-m-methylcarbanilate	80,142,155	NE67
428		2	isopropyl 2-methoxy-5-methylcarbanilate	103,106 116	NE69 D<26
429		2	isopropyl 2,5-dimethoxycarbanilate	70,147,161	NE67
430		2	isopropyl N-isopentylcarbanilate	83,99 114	NE46 D<22

carbanilates

Laboratory Accession Number	Submitter's Chemical Number	Submitter	Chemical Name	Dose Mg/Kg	Effect & Time
431		2	isopropyl N-butylcarbanilate	89,95,147	NE46
432		2	isopropyl N-methylcarbanilate	99,106 82	NE46 D<21
433		2	isopropyl m-methylcarbanilate	99,101,103	NE46
435		2	isopropyl N,o-dimethylcarbanilate	55,139 97	NE46 D<21
436		2	isopropyl N-ethylcarbanilate	82,87,124	NE45
438		2	1-carbobutoxyethyl m-cyanocarbanilate	>100,>100,187	NE45
439		2	1-carbobutoxyethyl N-methylcarbanilate	87,104,118	NE44
440		2	1-carbobutoxyethyl carbanilate	72,<100,<100	NE44
441		2	1-carbobutoxyethyl 2-methoxy-5-methylcarbanilate	72,124,167	NE44
442		2	1-carbobutoxyethyl m-chlorocarbanilate	113,126,167	NE43
443		2	1-carboethoxyethyl carbanilate	137,160,166	NE43
445		2	1-carboethoxyethyl m-chlorocarbanilate	177,189,219	NE43
446		2	1,2-dicarbobutoxyethyl carbanilate	126,148,158	NE43
447		2	B-[1-(2-heptadecenyl)-glyoxalidinyl]ethyl carbanilate	166,193,244	NE44
448		2	pentyl m-chlorocarbanilate	88,125 108	NE43 S<18,R<40
462		2	dibutyl m-chlorocarbanilate	61,69,142	NE46
464		2	3-chloroallyl m-chlorocarbanilate	115,117,118	NE46

carbanilates

Laboratory Accession Number	Submitter's Chemical Number	Submitter	Chemical Name	Dose Mg/Kg	Effect & Time
466		2	2-octanone phenylcarbamoyloxime	81,87,157	NE46
467		2	2-(1-chloro-3-isopropoxy)propyl carbanilate	152,156,183	NE46
468		2	1-chloro-2-buten-2-yl m-chlorocarbanilate	69,112,200	NE45
469		2	2-chloroethyl 2-methoxy-5-methylcarbanilate	144,149,158	NE46
470		2	2-pentyl m-chlorocarbanilate	61,99,134	NE46
471		2	2-chloroethyl m-methylcarbanilate	74,121,153	NE46
472		2	1-cyano-3,5,5-trimethylhexyl carbanilate	77,80,121	NE41
473		2	isopentyl m-chlorocarbanilate	95,159 154	NE46 S<46
474		2	2-methylbutyl m-chlorocarbanilate	180,201,209	NE46
475		2	3,7-dimethyl-1,6-octadien-3-yl carbanilate	89,95,145	NE43
476		2	3,7-dimethyl-2,6-octadienyl carbanilate	108,146,155	NE43
477		2	3,7-dimethyl-6-octenyl carbanilate	100,129,139	NE43
478		2	3-pentyl m-chlorocarbanilate	47,145,145	NE43
479		2	sec-butyl m-chlorocarbanilate	127,142 159	NE42 D<17
480		2	2-propyl m-methylcarbanilate	106,119,159	NE42
481		2	ethyl N-ethylcarbanilate	130,152,152	NE42
483		2	isopropyl N,m-dimethylcarbanilate	110,114,152	NE42
484		2	isopropyl N,p-dimethylcarbanilate	81,163,180	NE41

Laboratory Accession Number	Submitter's Chemical Number	Submitter	Chemical Name	Dose Mg/Kg	Effect & Time
485		2	urazole (1H-1,2,4-triazole-3,5-(2H, 4H) dione	78,116,149	NE46
486		2	isopropyl 2-methoxy-5-nitrocarbanilide	133,133,187	NE46
487		2	isopropyl m-methoxycarbanilide	123,231 218	NE46 S<46
489		2	isopropyl 2-methyl-5-isopropylcarbanilate	99,155,161	NE47
490		2	isopropyl m-ethoxycarbanilate	73,146 113	NE47 D<40
491		2	isopropyl p-ethoxycarbanilate	53,189,199	NE96
492		2	isopropyl 2-methyl-3-chlorocarbanilate	66,109,129	NE96
493		2	isopropyl 2,5-diethoxycarbanilate	73,91,101	NE96
494		2	isopropyl 2,6-dimethylcarbanilate	121,129,200	NE96
495		2	isopropyl 2-methoxy-5-chlorocarbanilate	136,166,211	NE96
497		2	2,5-dichlorocarbanilate	60,167,178	NE96
499		2	isopropyl 2,5-dimethylcarbanilate	88,124,129	NE96
500		2	isopropyl 2,3-dichlorocarbanilate	100,159,173	NE96
501		2	isopropyl 3,5-dimethylcarbanilate	111,116,157	NE96
502		2	isopropyl 2,3-dimethylcarbanilate	144,161,180	NE96
503		2	isopropyl 2,4-dimethoxycarbanilate	161,194,222	NE96
504		2	isopropyl m-chlorocarbanilate	99,106,150	NE96
505		2	isopropyl m-cyanocarbanilate	186,187,188	NE96

carbanilates

Laboratory Accession Number	Submitter's Chemical Number	Submitter	Chemical Name	Dose Mg/Kg	Effect & Time
507		2	isopropyl carbanilate	133,207,209	NE70
508		2	isopropyl 3-chloro-4-methylcarbanilate	104,207,229	NE70
514		2	2-(1,3,4-trichlorobutyl) carbanilate	98,193,198 101 220	NE66 S1,D<20 D<40
515		2	2-tetrahydropyranylmethyl carbanilate	61,143,158	NE66
516		2	2-(1-dimethylamino)propyl carbanilate	120,177,190	NE66
517		2	2-(1,3-dichloro)propyl carbanilate	197,337,346	NE66
519		2	2-chloroethyl carbanilate	129,160,278	NE66
520		2	2-chloroethyl m-chlorocarbanilate	112,136,252	NE66
521		2	2-chloroethyl 2-methyl-5-chlorocarbanilate	178,205 179	NE45 D<20
522		2	4-(2,6-dimethyl)heptyl carbanilate	71,120,152	NE45
523		2	4-(4-ethynyl-2,5-dimethyl)heptyl carbanilate	67,139,189	NE45
524		2	3-pentanone phenylcarbamoyloxime	116,123,175	NE45
526		2	1,1-dimethyl-2-propynyl carbanilate	80,103,183	NE46
527		2	3-formylphenyl carbanilate	109,159,196	NE45
528		2	3-chloropropyl carbanilate	90,91,96	NE45
529		2	2-(1-phenoxy)propyl carbanilate	140,165,190	NE45
530		2	4-indanyl m-chlorocarbanilate	79,97,134	NE43
531		2	2-(1,1,1-trichloro-2-methyl)propyl m-chlorocarbanilate	111,235,270	NE43

carbanilates

Laboratory Accession Number	Submitter's Chemical Number	Submitter	Chemical Name	Dose Mg/Kg	Effect & Time
532		2	2-(1,1,1-trichloro-3-nitro)propyl carbanilate	46,115 151	NE43 S24,D<30
534		2	2-chloroethyl 2,5-dimethylcarbanilate	115,130,173	NE41
535		2	2-butanone m-chlorophenylcarbamoyloxime	99,164,182	NE42
536		2	2-chloroethyl m-cyanocarbanilate	164,178,213	NE48
538		2	2-chloroethyl 2,5-dichlorocarbanilate	173,222,286	NE96
539		2	5-indanyl m-chlorocarbanilate	114,147,163	NE96
540		2	2-butanone phenylcarbamoyloxime	92,168,212	NE96
541		2	2-methylallyl carbanilate	154,168,178	NE96
543		2	1-methyl-1-ethynylpropyl carbanilate	110,136,147	NE96
544		2	1-ethynylcyclohexyl m-chlorocarbanilate	167,181,211	NE96
545		2	2-phenylethyl chlorocarbanilate	114,157,234	NE96
546		2	2,2,5,5-tetramethyltetrahydro-3-oximinofuryl carbanilate	30,62 89	NE96 D<20
547		2	ethylene bis-m-chlorocarbanilate	102,149,167	NE96
548		2	tert-pentyl m-chlorocarbanilate	135,144,260	NE96
549		2	acetone 2,5-dichlorophenylcarbamoyloxime	167,219,221	NE96
550		2	acetone p-chlorophenylcarbamoyloxime	123,160,204	NE96
551		2	acetone m-methylphenylcarbamoyloxime	81,170,179	NE96
552		2	acetone m-chlorophenylcarbamoyloxime	95,221,234	NE72

carbanilates

Laboratory Accession Number	Submitter's Chemical Number	Submitter	Chemical Name	Dose Mg/Kg	Effect & Time
554		2	acetone phenylcarbamoyloxime	98,109 220	NE72 D<70
555		2	3-methyl-3-penten-2-one phenylcarbamoyloxime	107,154 90	NE72 D<70
556		2	1-carbobutoxyethyl carbanilate	108,241,320	NE68
557		2	1-cyano-1-methylethylcarbanilate	93,106,169	NE70
558		2	1-phenylethyl-m-chlorocarbanilate	95,183,201	NE70
559		2	p-menth-1-en-8-yl carbanilate	102,158,213	NE70
560		2	tert-butyl m-chlorocarbanilate	155,218 70	NE70 D<18
561		2	furfuryl carbanilate	93,98 44	NE70 D<18
562		2	‹(-carbobutoxybenzyl carbanilate	109,189,207	NE69
563		2	1-carboxyethyl carbanilate	57,57,143	NE69
564		2	1-carbobenzoethyl carbanilate	96,259,267	NE69
565		2	1-carbobutoxyethyl carbanilate	>100,>100,228	NE74
566		2	1-carbo-2-octoxyethyl carbanilate	53,57,134	NE42
567		2	1-carbo-(2-chloroethoxy)ethyl carbanilate	124,174,213	NE42
568		2	1-carbocyclohexoxyethyl m-chlorocarbanilate	105,107,165	NE42
569		2	1-carbo-(2-chloroethoxy)ethyl carbanilate	81,139,146	NE42
570		2	1-carbo-(2,4-dichlorophenoxyethoxy)ethyl m-chlorocarbanilate	>100,278 >100	NE73 D<22

carbanilates

Laboratory Accession Number	Submitter's Chemical Number	Submitter	Chemical Name	Dose Mg/Kg	Effect & Time
571		2	1-methyl-1-carbethoxyethyl carbanilate	109,122,149	NE41
572		2	1-methyl-1-carbobutoxyethyl carbanilate	99,208,217	NE41
573		2	1-carbododecoxyethyl carbanilate	110,144,174	NE41
574		2	1-carboxyethyl m-chlorocarbanilate	119,164,167	NE41
575		2	1-carbo-(2,4-dichlorophenoxyethoxy)ethyl m-methylcarbanilate	47,84 106	NE41 D<17
576		2	2-methyl-2-nitropropyl carbanilate	100,117,149	NE41
577		2	3-methyl-2-butanone phenylcarbamoyloxime	101,142,165	NE41
578		2	methyl 2-thienyl ketone phenylcarbamoyloxime	118,129,148	NE41
586		2	2-carbobutoxyethyl carbanilate	123,222 183	NE46 S<20,D29
587		2	2-chloroallyl m-chlorocarbanilate	176,214,231	NE46
588		2	2-(2-cyanoethoxy)ethyl m-chlorocarbanilate	142,255,263	NE46
589		2	2-cyanoethyl carbanilate	68,88,121	NE42
590		2	2-cyanoethyl m-chlorocarbanilate	77,207,229	NE42
591		2	2-(2,4-dichlorophenoxy)ethyl carbanilate	96,154,212	NE42
592		2	2-(2,4-dichlorophenoxy)ethyl-m-chlorocarbanilate	94,126 165	NE42 D<15
593		2	1-methyl-2-propynyl carbanilate	89,132,163	NE42

carbanilates

Laboratory Accession Number	Submitter's Chemical Number	Submitter	Chemical Name	Dose Mg/Kg	Effect & Time
594		2	1,2-dimethylpropyl m-chlorocarbanilate	127,150,197	NE44
595		2	2-morpholinoethyl carbanilate	94,221,249	NE44
596		2	2-(2-pyridyl)ethyl carbanilate	123,133 144	NE44 D<20
597		2	8-quinolyl carbanilate	109,132,222	NE43
598		2	2-phenoxyacetamidoethyl m-chlorocarbanilate	53,83,104	NE43
599		2	2-cyclopenten-1-yl m-chlorocarbanilate	104,161,241	NE43
600		2	cyclopentyl carbanilate	120,159,187	NE43
601		2	neopentyl m-chlorocarbanilate	137,209,219	NE43
602		2	dl-trans-3,3,5-trimethylcyclohexyl carbanilate	116,147,200	NE43
603		2	dl-trans-3,3,5-trimethylcyclohexyl carbanilate	127,153,163	NE43
610		2	cyclohexanone phenylcarbamoyloxime	113,144 203	NE90 D<80
611		2	acetophenone phenylcarbamoyloxime	43,122,184	NE90
612		2	ethyl pyrivate phenylcarbamoyloxime	64,74,80	NE90
613		2	ethyl levulinate phenylcarbamoyloxime	53,94,120	NE90
614		2	2,3-butanedione phenylcarbamoyloxime	66,101,134	NE90
615		2	2-propynyl-m-chlorocarbanilate	107,142,160	NE90
616		2	2-propynyl-p-chlorocarbanilate	88,113,248	NE90
617		2	2-propynyl-2-methyl-5-chlorocarbanilate	52,221,224	NE90

carbanilates

Laboratory Accession Number	Submitter's Chemical Number	Submitter	Chemical Name	Dose Mg/Kg	Effect & Time
618		2	2-propynylcarbanilate	175 152 241	NE90 D<80 D<19
499		2	isopropyl 2,5-dimethylcarbanilate	88,124,129	NE90

oxanilates

496		2	isopropyl m-chlorooxanilate	90,178,189	NE96

carbazates

488		2	isopropyl 2-methyl-3-phenylcarbazate	93,190,193	NE48
510		2	isopropyl 2-phenylcarbazate	78,104,142	NE70
511		2	isopropyl 3-(2,4,6-trichlorophenyl)carbazate	138,192,204	NE66
512		2	isopropyl 3-(2,5-dichlorophenyl)carbazate	65,106 121	NE66 D<20
513		2	isopropyl 3-(2,4-dinitrophenyl)carbazate	79,107,133	NE66

fluoroborates

156	R-1-9F	19	morpholinium tetrafluoroborate	88,111,162	NE22
169	W-9-73A	19	tetramethylammonium tetrafluoroborate	42,58,96 152,154	NE48 S2:30,D4:30
172	R-1-9	19	benzyltrimethylammonium tetrafluoroborate	2,9 5,6 4,7,10	S2,R<168 S2:15,R<23 S2,D5:30

fluoroborates

Laboratory Accession Number	Submitter's Chemical Number	Submitter	Chemical Name	Dose Mg/Kg	Effect & Time
174	W-11-84	19	n-butylammonium tetrafluoroborate	76,79,198	NE43
177	W-10-145	19	phenyltrimethylammonium tetrafluoroborate	156,156,182	S1:50,D4
187	W-11-83	19	tri-n-butylammonium tetrafluoroborate	101,107,125	NE46
188	W-11-123	19	di-n-butylammonium tetrafluoroborate	65,123,139	NE46
189	R-1-8B	19	tetra-n-propyl ammonium fluoroborate	65,76,102	NE46
1247	W-9-76	3	tetraethylammonium tetrafluoroborate	69 88,124	NE48 D<22
1248	W-9-74A	3	tetramethylammonium monohydroxytrifluoroborate	85,138 85 166 287	NE120 S3:10,R<118 S4,D21 D4
1252	R-2-103B	3	bis(2-ethylhexylammonium) tetrafluoroborate	107 155	S27,R<213 S27,D71
1387	HH-4-112	19	tetraethylammonium tetrafluoroborate	34 63 139	NE168 S51,R<165 D<20

fluorophosphates

154	W-9-36	19	N-phenyl-N,N,N-trimethylammonium hexafluorophosphate	35,52,134,287 171 180	S<21,R<165 D20:30 S<17,D23:30
157	R-1-4	19	N-dodecylbenzyl-N,N,N-trimethylammonium hexafluorophosphate	45,48,63	NE22
163	R-1-11E	19	N-octadecyl-N,N,N-trimethylammonium hexafluorophosphate	55,73,152	NE21

fluorophosphates

Laboratory Accession Number	Submitter's Chemical Number	Submitter	Chemical Name	Dose Mg/Kg	Effect & Time
164	W-4-111'B	19	morpholine hexafluorophosphate	75,80,88	NE22
173	S-1-122	19	tri-n-propylammonium hexafluorophosphate	73,97,115	NE50
175	S-1-132	19	N,N-diethylcyclohexylammonium hexafluorophosphate	94,94,103	NE43
180	W-8-170	19	N-benzyl-N,N-dimethylammonium hexafluorophosphate	99,129,219	NE45
181	W-8-177	19	tetra-n-propylammonium hexafluorophosphate	89,92,115	NE45
182	W-11-24	19	di-n-pentylammonium tetrafluoroborate	80,127 149	NE70 D<70
184	W-8-131	19	2-benzyl-2-thiopseudourea hexafluorophosphate	45,52,56	NE48
191	R-1-11	19	benzyltrimethylammonium hexafluorophosphate	2.1,2.8,6 4.6 6.5 9.3	NE120 S3,D7 S3,D6 S3,D5
192	M-2-71	19	n-hexadecyldimethylbenzylammonium hexafluorophosphate	87,174,175	NE48
201	R-1-8A	19	n-butylammonium hexafluorophosphate	65,131,149	NE24
204	2-6-6	19	tetra-n-butylammonium hexafluorophosphate	77,80	NE26
205	W-9-48	19	tri-n-butylammonium hexafluorophosphate	120,128,158	NE26
1251	R-2-103A	3	bis(2-ethylhexylammonium)hexafluorophosphate	172,217 109	NE120 D<45
1257	M-2-53	3	pyridinium hexafluorophosphate	172,199 360	NE120 D17
1259	W-9-92	3	tetramethylammonium hexafluorophosphate	140,273 202	NE120 D<111

fluorosilicates

Laboratory Accession Number	Submitter's Chemical Number	Submitter	Chemical Name	Dose Mg/Kg	Effect & Time
183	W-11-80	19	di-n-butylammonium hexafluorosilicate	93,115	NE69

fluorosulfonates

185	W-8-198	19	tetra-n-propylammonium fluorosulfonate	62,103 107	NE47 D<22

fluorotitanates

2168	MA-3-21	19	benzyltrimethylammonium hexafluorotitanate	65,93 74	S<24,D<72 D<21

fluoroarsenates

1390	HH-4-86	19	cetyl dimethylbenzylammonium monohydroxypentafluoroarsenate	49,104,145	NE46
1391	R-1-15C	19	trimethylammonium hexafluoroarsenate	130,261 642	NE46 D2:30
2166	MA-3-19	19	benzyltrimethylammonium hexafluoroarsenate	18,28,52 17 36,42	NE120 S4:15,D<21 D<20

fluoroantimonates

2167	MA-3-20	19	benzyltrimethylammonium hexafluoroantimonate	7 11 15 17,18	NE120 D<41 D<17 D<32

fluorostannites

2169	MA-3-22	19	benzyltrimethylammonium fluorostannite	104 119	S1:15,D3:30 S1:15,D2:30

Aldehydes

aldehydes and acetals

Laboratory Accession Number	Submitter's Chemical Number	Submitter	Chemical Name	Dose Mg/Kg	Effect & Time
366	O-473	28	cinnamaldehyde	81,163	NE47
375	O-658	28	∝-pentylcinnamaldehyde	97,100,109	NE43
661	147	28	piperonal	181,264,270	NE45
912	S-512	18	methylaminodiethyl acetal	62,93 58	NE67 D<19
953	F-98	34	acrolein ("AQUALIN," 95% active)	51,120 89	D=18 D<42
1628	O-2066	28	heptanal	51,109,187	NE47

oximes

830	N-625	9	O-diethoxyphosphinyl-1-chloroacetaldoxime	80,143,162	NE43
885	LF 51	3	3,5-dichlorosalicylaldehyde oxime	71,121,195	NE41
893	S-5731	18	acetone oxime	78,123,155	NE42
1126	N-775	9	O-(diethoxyphosphinyl)acetone oxime	119 178,212	NE94 D3:45
1151	N-834	9	O-diethylphosphorylbenzaldehyde oxime	132,221,232	NE69

Ketones

212	LF-3	3	hexachloro-2,5-cyclohexadien-1-one	166,224,250	NE42
324	#120	20	1,2,3,4-tetrachlorobicyclo[2.2.1]hept-2-en-5-one	148,254,277	NE92
423	LF-40	3	p-benzoquinone	141,173,175	D<70

Ketones

Laboratory Accession Number	Submitter's Chemical Number	Submitter	Chemical Name	Dose Mg/Kg	Effect & Time
413	LF-30	3	methyl 2-thienyl ketone	73,119 150	NE90 D<17
414	LF-31	3	4,4,4-trifluoro-1-(2-thienyl)-1,3-butanedione	40,61,72	NE91
651	45	28	4-hydroxy-4-methyl-2-pentanone	63,87,166	NE44
659	736	28	d 1,3,3-trimethyl-2-norbornanone	56,75 74	NE43 S1:30,D<41
671	152	28	hexachloro-2,5-cyclohexadien-1-one	186,296,322	NE48
677	77	28	xanthen-9-one	130,131,156	NE22
1048	1230	28	2-heptanone	65,115,171	NE69
1052	1229	28	2-methyl-2-pentanone	84,100,140	NE46
1203	N-1188	9	1,3-bis(diethoxyphosphinothioylthio)-2-propanone	99,119,125	NE96
1813		9	2-diphenylacetyl-1,3-indanedione ("DIPHACINONE")	55,82,97	NE120
1814		9	sodium salt of 2-diphenylacetyl-1,3-indanedione ("SODIUM SALT OF DIPHACINONE")	32,56,68	NE144
2013		26	decachlorooctahydro-1,3,4-metheno-2H-cyclobuta [cd] pentalen-2-one ("KEPONE")	245 114 153	S120,R<336 S<89,D216 S120,D<288
1524	SBP-118-P RS 2220	10	4-(o-chlorophenoxy)-1,3-dioxolan-2-one	84,117,173	NE44

Amines

amines

Laboratory Accession Number	Submitter's Chemical Number	Submitter	Chemical Name	Dose Mg/Kg	Effect & Time
207	#731	45	1-lauryltetraethylenepentamine	30,61,66 51 66 86	NE68 D<18 S5,D<20 S<22,D30
218	BIO 5931	9	4-(2-amino-2-methylpropyl)morpholine	67,91,92	NE46
222	N-5941	9	N^1-(1,1-dimethyl-2-hydroxyethyl)-2-methyl-1,2-propanediamine	77,94 168	NE43 D<42
227	BIO 5851	9	N^1-(1,1,3,3-tetramethylbutyl)-2-methyl-1,2-propanediamine	104 107 45	NE48 S24,R47 D<22
229	BIO 5933	9	N^1-(p-aminophenyl)-2-methyl-1,2-propanediamine	45,71 107	NE48 S24,D28
234	BIO 5932	9	N^1-dehydroabietyl-2-methyl-1,2-propanediamine	75,76,112	NE42
239	N-5930	9	N^1,N^1-dibutyl-2-methyl-1,2-propanediamine	62 80,91	NE94 S4:30,D<21
245	BIO 5928	9	N^1,N^1-dimethyl-1,2-butanediamine	29,68,79	NE91
258	N-3612	9	2-methyl-1,2-propanediamine	61 69,71	NE48 S2,R<22
265	N-5929	9	N^1-butyl-2-methyl-1,2-propanediamine	38,54,69	NE43
269	N-5940	9	N^1-isopropyl-2-methyl-1,2-propanediamine	39,64,83	NE46
289	BIO 5852	9	2-methyl-N^1-tetrahydrofurfuryl-1,2-propanediamine	92,97,103	NE115
425	LF-42	3	ethylenediamine	129,143,159	D<60

Laboratory Accession Number	Submitter's Chemical Number	Submitter	Chemical Name	Dose Mg/Kg	Effect & Time
450		2	N-carbethoxymorpholine	97,127,157	NE42
451		2	N-carbobutoxy-2,2,4,6-tetramethylpiperidine	122,131	NE42
452		2	N-carbobutoxypiperidine	136,141 123	NE41 S<17,D21
453		2	N-carbethoxypiperidine	148,155 110	NE42 D<17
454		2	N-carbobutoxymorpholine	75,96,194	NE41
455		2	N-carboisopropoxypyrrolidine	76,92,106	NE48
456		2	N-carboisopropoxypiperidine	51,129 119	NE48 S2:20,D7
457		2	N-carboisopropoxymorpholine	74,85	NE48
458		2	N-carbethoxy-2,2,4,6-tetramethylpiperidine	77,108,136	NE48
829	N-562	9	copper (ethylenedinitrilo)tetraacetate	3,5.9,8.8 8.5 27 41	NE48 D<22 D<67 S<67,D<92
886	S-5730	18	phenethylamine	66,89,145	NE72
895	S-5325	18	benzylamine	75,79 39	NE72 D<44
896	S-484	18	d(-methylphenethylamine	89 104 98	NE72 S4,R<72 S5,D<41
897	S-552	18	N,N-dimethylbenzylamine	80,97,136	NE72

amines

Laboratory Accession Number	Submitter's Chemical Number	Submitter	Chemical Name	Dose Mg/Kg	Effect & Time
902	S-563	18	N-isopropylbenzylamine	107 51 60	NE70 S3:45,R<70 S3:45,D<46
903	S-522	18	3,4-dimethoxy-α-methylphenethylamine	56,98 50 137	S4:30,R<164 S3:45,D<70 S<22,D<168
904	S-5380	18	dibenzylamine	73,114 140	NE68 D<67
911	S-4920	18	N-methyldibenzylamine	120,132,154	NE67
913	S-4921	18	N-methylbenzylamine	95,119,150	NE66
915	S-4610	18	dl-N,α-dimethylphenethylamine(dl-deoxyephedrine)	103,105,126	S1:30,R<67
916	S-4612	18	dlα-methylphenethylamine(dl-amphetamine)	84,104,130	S1:30,D<67
935	S-5610	18	N-phenylbenzylamine	83,127,285	NE44
1055	1231	28	morpholine	131,148,157	NE46
1168	N-862	9	N,N'-bis(diethylthionophosphoyl)ethylenediamine	80,163,207	NE48
1275	LF 103	3	diethylene triamine	92,103	NE120
1278	LF 104	3	1,2-propanediamine	70,120,130	NE120
1328	0-757	28	N-phenyl-N-nitrosobenzylamine	88,108,127	NE44
1482	163	3	N,N'-dibutylethylenediamine	112,124,222	NE23
1483	164	3	N,N'-di-sec-butylethylenediamine	49,63,69	NE45

amines

Laboratory Accession Number	Submitter's Chemical Number	Submitter	Chemical Name	Dose Mg/Kg	Effect & Time
1490	171	3	dioctylamine	93,106,118	NE48
1491	172	3	N,N-diethylethylenediamine	77,93,95	NE48
1525	SBP-120-P RS 2115	10	octadecylamine	143,159,164	NE44
1549	SBP-200-P LSX-222	10	2-(3-pyridyl)piperidine ("ANABASINE")	2,2.4 2.9,3 4,9 17	NE148 S<3,R<72 S2:30,D<15 S2:40,D3:30
1580	183	3	N,N-dimethylethylenediamine	128,164 88	NE68 S<43,D<65

amine salts

303	MA-349	7	3-dimethylamino-3-phenylpentane hydrochloride	69 146 104,109	NE120 S1:40,R<70 D<20
307	MA-307	7	N,N[1]-dipiperonyl-5,11-diaminopentadecane dehydrochloride	146 155 207	D<20 S68,D<106 S<64,D90
308	MA-86	7	spiro[piperidinocyclohexane-4,9'-fluorene] hydrochloride	79,179 144	NE192 S40,D<106
920	S-502	18	N,N-dimethyl-N'-(2-pyridyl)-N'-furfurylethylene-diamine hydrochloride	122 136 171	D<19 S1:30,D3:30 D2:30
926	S-4912	18	d-α-methylphenethylamine sulfate	37,59 117	NE45 S3:30,D5

amine salts

Laboratory Accession Number	Submitter's Chemical Number	Submitter	Chemical Name	Dose Mg/Kg	Effect & Time
946	S-4180	18	d-N,α-dimethylphenethylamine hydrochloride	82 119 139	S1:45,R<117 S1:45,D3:15 S1:45,D2:05
948	S-483	18	dl-α-methylphenethylamine sulfate	85,91 110	S1:45,D4 S1:45,D<22
952	S-461	18	dl-N,α-dimethylphenethylamine	61,130,163	D<48
1538	SBP-172-P RS 2088	10	N-(o-carboxyphenyl)piperidine hydrobromide	107,215 87	S2:30,R71 S2:30,D44
1553	SBP-227-P RS 2693	10	mescaline sulfate (3,4,5-trimethoxyphenethylamine sulfate)	57 173 195	NE45 S<17,R<45 D<17
2221	TD 62	60	primary alkylamine (tallow) salt of 3,6-endooxohexahydrophthalic acid	44,47,93	S<2:30,R<24
1314	IF-99	3	2-bromotriethylamine hydrobromide	36 128,192	NE67 D<67
1489	170	3	ethylenediamine dihydrobromide	176,259,304	NE42

quaternary ammonium salts

304	MA-164	7	bis-(2-dimethylaminoethyl)fluorene dimethochloride	42,51,54	D<28
306	MA-362	7	1-ethylcyclopentyltrimethylammonium iodide	130,174,193	D<28
901	S-5732	18	benzyltrimethylammonium hydroxide	80,103 145	S0:50,D3 S0:50,D1:20
907	S-5717	18	benzyltrimethylammonium methoxide (40% solution) in methanol	73,116,155	S0:45,D1:30
908	S-568	18	p-dodecylbenzyltrimethylammonium chloride	>100,>100,>100	S1:45,D<19

quaternary ammonium salts

Laboratory Accession Number	Submitter's Chemical Number	Submitter	Chemical Name	Dose Mg/Kg	Effect & Time
951	S-5718	18	dibenzyldimethylammonium chloride dihydrate	86,149 178	NE92 S1:10,D4:10

hydrazine and hydrazine salts

728	LF 62	3	2-phenyl-1-hydrazine sulfate	121,121,131	D<25
1290	LF-108	3	o-nitrophenylhydrazine	146 162 165	D<114 S22,D24 D<18
1404	LF-149	3	phenylhydrazine	5,20,42 52 65 94	NE48 D<25 D<43 D<18
1406	LF-151	3	2,4-dinitrophenylhydrazine	65,70,191	NE66
1484	165	3	hydrazine	119 79 136	NE46 D<44 D<22
1405	LF-150	3	phenylhydrazine hydrochloride	79 113,117	NE66 D<18

metal amine complexes

737	NIA 568	9	N,N'-ethylenebis(salicylideneiminato)mercury-(II)	96,108,215	NE44
740	NIA 567	9	N,N'-ethylenebis(salicylideneiminato) chromium-(II)	85,119,181	NE43
747	NIA 569	9	N,N'-ethylenebis(salicylideneiminato) cadmium-(II)	163,183,212	NE44
748	NIA 570	9	N,N'-propylenebis(salicylideneiminato) cobalt-(II)	102,133,164	NE44

metal amine complexes

Laboratory Accession Number	Submitter's Chemical Number	Submitter	Chemical Name	Dose Mg/Kg	Effect & Time
785	NIA 576	9	N,N'-propylenebis(salicylideneiminato)cadmium-(II)	109,133,139	NE115
790	NIA 575	9	N,N'-propylenebis(salicylideneiminato)mercury-(II)	230,231,258	NE90
792	NIA 573	9	N,N'-propylenebis(salicylideneiminato)iron-(II)	97,113	NE90
793	NIA 566	9	N.N'-ethylenebis(salicylideneiminato)nickel-(II)	143,172,204	NE90
795	NIA 565	9	N.N'-ethylenebis(salicylideneiminato)manganese-(II)	78,95,99	NE90
808	NIA 559	9	N.N'-ethylenebis(salicylideneiminato)cobalt-(II)	103,136,137	NE46
809	NIA 560	9	N.N'-ethylenebis(salicylideneiminato)copper-(II)	106,111,121	NE46
814	NIA 572	9	N.N'-propylenebis(salicylideneiminato)copper-(II)	165,167,232	NE40
815	NIA 571	9	N.N'-propylenebis(salicylideneiminato)nickel-(II)	104,108,137	NE46
828	NIA 561	9	N.N'-ethylenebis(salicylideneiminato)zinc-(II)	105,167 75	NE44 S3,D<20
839	NIA 564	9	N.N'-ethylenebis(salicylideneiminato)iron-(II)	65,182 149	NE96 D<93

Nitriles

359	O-311	28	dodecanitrile	82,92,117	NE67
405	LF-22	3	malonitrile	144,144	NE90
406	LF-23	3	glycolonitrile	63,112 88 113 184	NE96 S1,D4:30 S1,D<21 S46,D<67
407	LF-24	3	lactonitrile	79,89 125	NE94 S4,D5

Nitriles

Laboratory Accession Number	Submitter's Chemical Number	Submitter	Chemical Name	Dose Mg/Kg	Effect & Time
408	LF-25	3	3-chloropropanenitrile	130,163 145	NE90 D<18
1558	Form 10	58	benzyl cyanide	66,112,134	NE44

Amides and Imides

77		15	hexanamide ("CAPRAMIDE")	36,45,60	NE21
409	LF-26	3	N,N'-bis(1-methylpropyl)dithiooxamide	83,123,160,182 111 141	NE90 D<25 D<18
410	LF-27	3	N,N'-diallyldithiooxamide	44,74 132	NE90 D<18
411	LF-28	3	2-chloroacetamide	129 145 143	NE90 S24,R<90 S26,D<48
676	546	28	N-isobutyl-undecamide	67,137,142	NE48
727	LF 61	3	acrylamide	51,54,94	NE96
991	925	28	2-butoxy-N-pentylacetamide	151,219,288	NE96
1358	1016	28	N-pentylbenzamide	54,91,156	NE46
1485	166	3	N,N'-dipropyldithiooxamide	93,102,107	NE48
1624	0-2060-a	28	acetamide	55,90,129	NE46
1709		58	N-chloroacetamide	136,171 164	S<23,D<40 S<4,D<120

Amides and Imides

Laboratory Accession Number	Submitter's Chemical Number	Submitter	Chemical Name	Dose Mg/Kg	Effect & Time
2218	LF 254	3	cyanuric acid	75,81,96	NE48
84		25	3,5-dinitrobenzamide	96,178,185	NE22
383	O-1185	28	N-butyl-bicyclo [2.2.1] hept-5-en2,3-dicarboximide	54,63,116	NE46
35		39	N-trichloromethylmercapto-4-cyclohexene-1,2-dicarboximide ("VANCIDE 89")	101,104,118	NE46
43		42	N-trichloromethylmercapto-4-cyclohexene-1,2-dicarboximide ("CAPTAN")	60,73,104	NE23
990	1000	28	N-pentyl-5-norbornene-2,3-dicarboximide	109,146,247	NE95
1022	1395	28	N-propylphthalimide	193,219,223	NE70
553		2	cyanuric acid	144,211 176	NE72 D<70

Sulfur Compounds

sulfides and disulfides

352		39	bis-(diethylthiocarbamoyl)disulfide ("ETHYL TUADS")	82,119,169	NE69
353		39	bis-(dimethylthiocarbamoyl)disulfide ("METHYL TUADS")	121 93	NE69 S69
1242	N-1004	9	bis(dialkylthiophosphoryl)sulfide	130,175,187	NE65
137	1254	9	bis(dialkoxyphosphinothioyl)disulfide [alkyl=mixture of 3:1 ethyl: isopropyl] ("PHOSTEX")	59,92,146	NE46
1162	N-1082	9	Equimolar mixture of bis(diethoxy)- and bis (dimethoxy)-(phosphinothioyl)disulfide	38,156 139	NE67 D<18
1193	N-1012	9	bis(O-ethyl-O-methylthionophosphoryl)disulfide	53,183,214	NE95

sulfides and disulfides

Laboratory Accession Number	Submitter's Chemical Number	Submitter	Chemical Name	Dose Mg/Kg	Effect & Time
1194	N-1016	9	bis(0,0-dimethylthionophosphoryl)disulfide	132,139,225	NE94
1195	N-1015	9	bis(0-methyl-0-propylthionophosphoryl)disulfide	45,117,175	NE94
1196	N-1017	9	bis[0-methyl-0-(2-methylpropyl)thionophosphoryl] disulfide	148,204 73	NE94 D<70
1197	N-1018	9	bis[0-methyl-0-(1-methylpropyl)thionophosphoryl] disulfide	127,135,176	NE94
1198	N-1019	9	bis(0-methyl-0-butylthionophosphoryl)disulfide	90,176,190	NE94
1199	N-1058	9	bis[0-ethyl-0-(1-methylpentyl)phosphinothioyl] disulfide	93,160,170	NE94
1200	N-1025	9	bis(0-isopropyl-0-butylthionophosphoryl) disulfide	57,97,115	NE91
1201	N-1040	9	bis(0-propyl-0-isopropylphosphinothioyl) disulfide	104,123,179	NE92
1205	N-1024	9	bis(0-propyl-0-butylthionophosphoryl)disulfide	58,131,154	NE91
1206	N-1056	9	bis[0-ethyl-0-(1-ethylpropyl)phosphinothioyl] disulfide	134,150,166	NE90
1207	N-1187	9	S,S'-bis(diethoxyphosphinothioyl)tetrasulfide	80,112,112	NE90
1210	N-1057	9	bis[0-ethyl-0-(1-ethylpentyl)]disulfide	27,72,209	NE89
1211	N-1043	9	bis[0,0-di(2-ethylhexyl)phosphinothioyl] disulfide	93,99,133	NE89
1212	N-1046	9	bis(0-isopropyl-0-cyclohexylphosphinothioyl) disulfide	77,101,145	NE89

sulfides and disulfides

Laboratory Accession Number	Submitter's Chemical Number	Submitter	Chemical Name	Dose Mg/Kg	Effect & Time
1213	N-1075	9	bis(dialkoxyphosphinothioyl)disulfide alkyl group is an ethyl/isopropyl mixture	40,144,157	NE70
1215	N-1055	9	bis[O-propyl-O-(2-chloroethyl)phosphinothioyl] disulfide	52,103,164	NE70
1216	N-1050	9	bis[O,O-di(2-chloro-1-chloromethylpropyl) phosphinothioyl] disulfide	72,116,242	NE70
1217	N-1021	9	bis[O-isopropyl-O-(2-methylpropyl)thiorophosphoryl] disulfide	71,114,157	NE70
1223	N-1041	9	bis[O,O-di(2-chloroethyl)phosphinothioyl] disulfide	108	NE96
1225	N-1047	9	bis(O-isopropyl-O-tetrahydrafurfurylphosphinothioyl) disulfide	87,96,119	NE68
1226	N-1053	9	bis[O-methyl-O-(2,2,2-trichloroethyl)phosphinothioyl] disulfide	70,80,192	NE68
1228	N-1020	9	bis[O-ethyl-O-(2-methylpropyl)thionophosphoryl] disulfide	100,139,157	NE68
1229	N-1023	9	bis(O-ethyl-O-allylthionophosphoryl)disulfide	124,203,247	NE67
1230	N-1042	9	bis[O,O-di(tetrahydrofurfuryl)phosphinothioyl] disulfide	47,112	NE67
1231	N-1045	9	bis[O,O-di(2-methoxyethyl)phosphinothioyl] disulfide	126,132,148	NE67
1232	N-1051	9	bis(O-ethyl-O-cyclohexylphosphinothioyl)disulfide	95,122 60	NE67 S2:35,D<67
1235	N-1022	9	bis[O-ethyl-O-(1-methylpropyl)thionophosphoryl] disulfide	113,135,139	NE66

sulfides and disulfides

Laboratory Accession Number	Submitter's Chemical Number	Submitter	Chemical Name	Dose Mg/Kg	Effect & Time
1236	N-1044	9	bis(O-ethyl-O-tetrahydrofurfurylphosphinothioyl) disulfide	96,193,219	NE66
1237	N-1049	9	bis[O,O-di(2-methoxyethoxyethyl)phosphinothioyl] disulfide	98,199,222	NE66
1238	N-1180	9	bis[O,O-di(2,2-diacetoxy-1-propoxy)phosphinothioyl] disulfide	58,112,139	NE65
1241	N-1026	9	bis[O-isopropyl-O-(1-methylpropyl)thionophosphoryl] disulfide	92,102,109	NE65
1243	N-1048	9	bis(O,O-dicyclohexylphosphinothioyl)disulfide	101,146,158	NE65
1244	N-1052	9	bis[O-isopropyl-O-(2-chloroethyl)phosphinothioyl] disulfide	102,129,136	NE65
1245	N-1054	9	bis(O-methyl-O-allylphosphinothioyl)disulfide	117,174,216	NE64
1123	N-766	9	A complex of 2 moles of cuprous O,O-di-2-propyl phosphorodithioate with 1 mole of bis(di-2-propoxyphosphinothioyl)disulfide	207,272,298	NE94
1124	N-770	9	A complex of 1 mole of cuprous O,O-di-2-propoxy-phosphorodithioate with 1 mole of bis(di-2-propoxyphosphinothioyl)disulfide	242,354	NE94
1153	N-839	9	A complex of 2 moles of cuprous O,O-diphenyl phosphoro-dithioate with 1 mole of bis(diphenoxyphosphinothioyl) disulfide	195,208,270	NE70
1154	N-840	9	A complex of 2 moles of cuprous O,O-di-2-butyl phosphorothioate with 1 mole of bis(di-2-butoxy-phosphinothioyl)disulfide	170,188,233	NE68
1180	N-905	9	A complex of 2 moles of cuprous O,O-bis(1-carbethoxy-ethyl) phosphorodithioate and 1 mole of the correspond-ing disulfide	136,166,202	NE43

sulfides and disulfides

Laboratory Accession Number	Submitter's Chemical Number	Submitter	Chemical Name	Dose Mg/Kg	Effect & Time
1187	N-933	9	A complex of 2 moles of cuprous O,O-bis[2-methoxy (ethoxy)ethyl] phosphorodithioate and 1 mole of the corresponding disulfide	125,164,173	NE42

sulfones

134	ME 6565	9	2,4,4',5-tetrachlorophenyl sulfone ("TEDION" 25% wettable)	47,54	NE20
135	4371	9	2,4,4',5-tetrachlorophenyl sulfone ("TEDION")	58,87,93	NE19
1631	O-2075-e	28	propyl sulfone	73,130,148	NE46

sulfonium salts

1377	LF-132	3	(2-hydroxyethyl)dimethylsulfonium iodide	69,144,179	NE140
1378	LF-133	3	(3-amino-3-carboxypropyl)dimethylsulfonium chloride	75,153,163	NE140
1379	LF-134	3	trimethylsulfonium iodide	66,225 69	NE140 D18
1383	LF-138	3	triphenyl sulfonium chloride	79 133,230	S1:20,D<17:30 S0:45,D<1
1582	185	3	triethylsulfonium iodide	89,105,392	NE68
2176	LF 213	3	trimethylsulfonium chloride	>50,>50,>50	NE72

Organometallics

2152	LF 204	3	tributyltin chloride	36,112,122	NE43

Heterocyclics

benzodioxathiepin-3-oxides

Laboratory Accession Number	Submitter's Chemical Number	Submitter	Chemical Name	Dose Mg/Kg	Effect & Time
123	504	9	6,7,8,9,10,10-hexachloro-1,5,5a,6,9,9a-hexahydro-6,9-methano-2,4,3-benzodioxathiepin-3-oxide ("THIODAN," 24% miscible)	49 195	S70,D118 S4:05,D 22
140	ME 6631	9	6,7,8,9,10,10-hexachloro-1,5,5a,6,9,9a-hexahydro-6,9-methano-2,4,3-benzodioxathiepin-3-oxide ("THIODAN," 25% wettable)	22 24 24	S<21,D49 S<21,D<189 S<21,D23
141	N-5462	9	6,7,8,9,10,10-hexachloro-1,5,5a,6,9,9a-hexahydro-6,9-methano-2,4,3-benzodioxathiepin-3-oxide ("THIODAN," 92%)	119,132,234	NE120

ureas

857	N-367	9	1,3-bis(di-2-ethylhexyloxyphosphinothioyl)urea	141,172,175	NE67
919	S-351	18	(2-bromo-2-ethylbutanoyl)urea	75,105,127	NE44
928	S-5272	18	(α-ethyl-2-butenoyl)urea	34,49,59	NE45
943	S-4411	18	1-acetyl-3-[2-bromo-2-ethylbutanoyl]urea	127,154,171	NE46
947	XS-513	18	1-acetyl-3-(2-ethylbutyl)urea	136,204,212	NE120
1129	N-780	9	1,3-bis(diethylphosphoryl) urea	135,158,160	NE92
1152	N-835	9	1,3-bis(dipropylthiophosphoryl)urea	46,78,147	NE68
1164	N-853	9	1,3-bis(sec-butylthiophosphoryl)urea	94,136,149	NE66
1166	N-857	9	1,3-(bis-2-ethylhexylthiophosphoryl)urea	100,137,159	NE66
1266	LF 123	3	(2,4-dinitrophenyl)urea	110,165,177	NE165
1529	SBP-129-P RS 2123	10	octadecylurea	176 94	NE44 D<19

thioureas and pseudothioureas

Laboratory Accession Number	Submitter's Chemical Number	Submitter	Chemical Name	Dose Mg/Kg	Effect & Time
208	GDC#17	45	S-benzyl-2-thiopseudourea hydrochloride	79 106 119	S2:55,D<15 S1:40,D<15 S1:55,D<15
341		39	trialkyl thiourea ("THIATE B")	66,89 94	NE43 D<10
735	N-592	9	s-(p-chlorobenzyl)isothioronium nicotinate	103,180 142	NE46 D<46
798	N-596	9	2-p-chlorobenzyl-2-thiopseudourea anthranilate	107,220 184	NE91 S<18,D<90
799	N-597	9	2-p-chlorobenzyl-2-thiopseudourea	117,134,153	NE91
802	N-594	9	2-p-chlorobenzyl-2-thiopseudourea diethyldithio-carbamate	164,223,250	NE46
803	N-595	9	2-p-chlorobenzyl-2-thiopseudourea trichloroacetate	95,254 161	NE91 S<43,D<91
804	N-590	9	2-benzyl-2-thiopseudourea	7.2,9.5,22.4 18 54 51	NE48 S4,D240 S4,D<141 S1:45,D<21:30
805	N-591	9	2-p-chlorobenzyl-2-thiopseudourea hydrochloride	39 110 187	NE144 S<45,R<144 D<21
820	N-598	9	2-p-chlorobenzyl-2-thiopseudourea benzoate	96,104,225	NE43
821	N-599	9	2-p-chlorobenzyl-2-thiopseudourea thiosalicylate	95,181,221	NE43
739	N-593	9	2-(p-chlorobenzyl)thiopseudourea trifluoracetate	121,202 170	NE43 D<18

thiazolines

Laboratory Accession Number	Submitter's Chemical Number	Submitter	Chemical Name	Dose Mg/Kg	Effect & Time
993	1001	28	2-(dodecylmercapto)-2-thiazoline	54,115,161	NE94
997	986	28	2-(dodecylthio)-2-thiazoline	153,212,236	NE70

azepines

301	MA 411	7	1-carbamoyl-4-methyl-1,5-benzo-2,3,4,5-tetrahydrodiazepine hydrochloride	85,121 163	NE69 S26,R<69
302	MA 523	7	1-carbamoyl-2-methyl-1,5-benzo-2,3,4,5-tetrahydrodiazepine	104,136 74	NE69 S1:55,D5
310	MA 528	7	1-carbamoyl-2,4-dimethyl-1,5-benzo-2,3,4,5-tetrahydrodiazepine hydrochloride	139,152,181	NE41
309	MA 290	7	2-methyl-1,5-benzo-1,2,3,4-tetrahydrodiazepine dehydrochloride	133 135 107	NE192 S68,R<188 S68,D90

triazines

337		4	2-chloro-4,6-bis(ethylamino)-s-triazine ("SIMAZINE 50W")	161,199,202	NE42

piperazines

305	MA 402	7	1-isobutyl-4-[1-methyl-2-(2-methoxy-3-hydroxyphenyl) ethyl] piperazine dihydrochloride	179 107 86,102 125,170	NE120 S<25,R<48 D<28 D<20
533		2	1,4-bis-carboisopropoxy-trans-2,5-dimethylpiperazine	105,121,200	NE43
721	LF 54	3	piperazine	52,115,159	NE67

guanidines

Laboratory Accession Number	Submitter's Chemical Number	Submitter	Chemical Name	Dose Mg/Kg	Effect & Time
68		15	cyanoguanidine	81,91,135	NE72
666	225	28	diphenylguanidine	3.2,6,8.7	NE114
				9.5,17	S<120,R<312
				5.6	D71
				9.5	S22,D125
				70	S46,D125

rhodanines

746	N-582	9	copper (II) 5-(p-dimethylaminobenzal)rhodanine	123,146,147	NE44
806	N-584	9	diacetyl-rhodanine condensation product, Cu salt	79,151,172	NE45
807	N-583	9	trichloromethylsulfenyl derivative of rhodanine	183,185,194	NE45
800	N-585	9	benzyl-rhodanine condensation product, Cu salt	93,138	NE91
				105	D<91
801	N-586	9	chloranil-rhodanine condensation product, Cu salt	128,210,281	NE91
822	N-587	9	p-benzoquinone rhodanine condensation product, Cu salt	156,283,334	NE44

hydantoins

932	S-427	18	sodium 5, 5-diphenylhydantoin	78,120	NE44
				76	S<19,R<24

barbiturates

1711		58	sodium 5-ethyl-5-pentylbarbiturate	117,130,151	D<16
929	S-452	18	sodium 5-ethyl-5-(1-methylbutyl)barbiturate	159	S<18,R<72
				155	S2:05,D<20
				172	D1:40

barbiturates

Laboratory Accession Number	Submitter's Chemical Number	Submitter	Chemical Name	Dose Mg/Kg	Effect & Time
936	S-4917	18	5-allyl-5-isobutylbarbituric acid	62,83 118	NE44 S<20,R<24
941	S-4410	18	sodium 5-thyl-5-(1-methyl-1-butenyl)barbiturate	102 130 200	S1:30,D<21 S2:30,D5 S1:30,D2:30

dioxaphospholane-2-oxides

733	N-628	9	2-(2,2-dichlorovinyloxy)-4,5-dimethyl-1,3,2-dioxaphospholane-2-oxide	84,116,116	NE44
738	N-629	9	2-(2,2-dichlorovinyloxy)-5-ethyl-4-methyl-1,3,2-phosphorinane-2-oxide	120,134,151	NE43
756	N-398	9	2-(2,2-dichlorovinyloxy)-1,3,2-dioxaphospholane-2-oxide	148,172,230	NE46
760	N-391	9	2-(2,2-dichlorovinyloxy)-4-methyl-1,3,2-dioxaphosphorinane-2-oxide	108,144 90	NE44 D<19
764	N-363	9	2-(2,2-dichlorovinyloxy)-4-methyl-1,3,2-dioxaphospholene-2-oxide	95,160,165	NE44
775	N-381	9	2-(2,2-dichlorovinyloxy)-4-methoxymethyl-1,3,2-dioxaphospholane-2-oxide	6,7,12 4 26 32	NE96 S2:45,R<48 D2:45 D<5
816	N-619	9	2-(1,2-dibromo-2,2-dichloroethoxy)-4-(ethoxymethyl)-1,3,2-dioxaphospholane-2-oxide	8,10,23 20 41,52	NE72 D<4:30 D<18
817	N-620	9	2-(1,2-dibromo-2,2-dichloroethoxy)-4-(1-methylethoxymethyl)-1,3,2-dioxaphospholane-2-oxide	14,17,24 25 55,108	NE48 D<22 D3:30

dioxaphospholane-2-oxides

Laboratory Accession Number	Submitter's Chemical Number	Submitter	Chemical Name	Dose Mg/Kg	Effect & Time
826	N-627	9	4-chloromethyl-2-(2,2-dichlorovinyloxy)-1,3,2-dioxaphospholane-2-oxide	115,148,193	NE44
831	N-624	9	4-allyloxymethyl-2-(2,2-dichlorovinyloxy)-1,3,2-dioxaphospholane-2-oxide	169,244 202 163,185	NE168 S<18,R48 D<18
844	N-634	9	2-(2,2-dichlorovinyloxy)-4,4,6-trimethyl-1,3,2-dioxaphosphorinane-2-oxide	96,120,138	NE94
845	N-635	9	2-(2,2-dichlorovinyloxy)-1,3,2-dioxyphosphepin-2-oxide	108,117,121	NE91
854	N-397	9	2-(2,2-dichlorovinyloxy)5-methyl-1,3,2-dioxaphosphorinane-2-oxide	93,184,215	NE67

phosgenes

1121	N-760	9	S-[bis(1-metnyıethoxy)phosphinothioyl] thiophosgene	116,126,168	NE94

imidazolines

296	GAC#1	45	2-(3,4-dichlorobenzylthio)-2-imidazoline hydrochloride	121,134 70	NE46 D<17
297	GAC#2	45	2-benzylthio-2-imidazoline hydrochloride	169,169,173	D-17
1026	1744	28	2-heptadecenyl-1-(2-hydroxyethyl)-2-imidazoline	119,143,158	NE94

pyrrolines

299	MA 428	7	2-phenyl-4-(2,3-dimethoxyphenyl)-2-pyrroline hydrochloride	69,72 82	NE46 S5,R46

miscellaneous

Laboratory Accession Number	Submitter's Chemical Number	Submitter		Dose Mg/Kg	Effect & Time
664	37	28	phenoxathin	82,216,256	NE51
725	LF 59	3	tetrahydro-1-methylthiophenium iodide	251,253,290	S<1:25,D<1:55
898	S-5277	18	2,2-diisopropyl-4-hydroxymethyl-1,3-dioxolane	55,110,140	NE72
922	S-513	18	5-nitrofurfurylidene diacetate	145,183,189	NE44
1370		57	alloxan	155,156 180	NE164 D47
2128		39	zinc salt of pyridinethione ("VANCIDE ZP")	1 4,10,14	S68 D<21

AROMATICS

Hydrocarbons

368	O-514	28	4-allyl-1,2-methylenedioxybenzene ("SAFROLE")	97,125,128	NE46
669	437	28	pentylbiphenyl (product of Friedl-Crafts reaction between n-pentyl chloride and biphenyl)	83,110,129	NE49
983	819	28	1,2-dibromo-2-nitroethylbenzene	204,391 262	NE43 SO:45,R<43
984	840	28	retene (7-isopropyl-1-methylphenanthrene)	188,274,285	NE43
1502	SBP-30-P RS 2695	10	podophyllotoxin	111,132 137	NE120 D<120
277	C-180	31	2,4,6-trinitrotoluene-β-naphthol complex	41,80,118	NE42
278	C-73	31	3,5-dinitro-2,4,6-tribromochlorobenzene	251,400,429	NE42
280	C-176	31	2,4,5-trichlorobromobenzene	91,97,121	NE119

Hydrocarbons

Laboratory Accession Number	Submitter's Chemical Number	Submitter		Dose Mg/Kg	Effect & Time
281	C-177	31	B-(2-furyl)-2,4,6-trinitrostyrene	148,195,217	NE119
282	C-175	31	3,5,6-tribromo-1,2,4-trichlorobenzene	263,288,295	NE119
286	C-173	31	p-chloronitrobenzene	165,208,236	NE119
320	#114	20	undecachloro-3a,4,7,7a-tetrahydro-4,7-methanoindane	242,245,245	NE95
419	LF-36	3	1,2-dibromoethylbenzene	235,307,413	NE70
582		2	bis-chloromethylxylene (mixture)	83,114,169	NE47
583		2	bis-cyanomethylxylene (mixture)	187,222,222	NE46
641	O-485	28	2-chloro-6-nitrotoluene	164,176,218	NE46
694	527	28	acenaphthylene	111,116 132	NE90 D-19
703	36	28	biphenyl	88,134,184	NE89
1008	867	28	chrysene	190,206,218	NE43
1051	1257	28	1,2,3,4-tetrahydronaphthalene	106,130,192	NE46
1577	180	3	epoxyethylbenzene	79,145,150	NE68
1609	1876-c	28	2,6-dimethylnaphthalene	105,108,198	NE92
2012		39	1,2,3-trichloro-4,6-dinitrobenzene ("VANCIDE F-2083")	256,296,327	NE89
2116	1078-107-8	37	2,4,5-trichlorotoluene	119,138,158	NE24
2117	1078-107-7	37	3,4,5-trichlorotoluene	125,172,179	NE24
2118	1078-107-12	37	2,4-dichlorotoluene	101,122,129	NE24
2119	1078-107-9	37	3,4-dichlorotoluene	82,102,131	NE24

Hydrocarbons

Laboratory Accession Number	Submitter's Chemical Number	Submitter	Chemical Name	Dose Mg/Kg	Effect & Time
2123	1005-129	37	2,3,6-trichlorotoluene	63,81,161	NE24
2164		57	1,2,4,5-tetrachlorobenzene	204,368,440	NE72
654	132	28	2-ethoxynaphthalene	141,150,175	NE46
712	445	28	2-(pentyloxy)naphthalene	88,103,131	NE71
75		15	m-dinitrobenzene	55,105,159	NE21
649	0-477	28	1-nitronaphthalene	152,226,299	NE46
722	LF 55	3	pentachloronitrobenzene	140,258,325	NE42
1579	182	3	1-(epoxyethyl)-4-nitrobenzene	63,147 158	NE68 D<19

Aldehydes

367	0-474	28	p-anisaldehyde	55,83,92	NE46
684	141	28	o-veratraldehyde	132,173 125	NE95 D<90
719	LF 52	3	furfural	89,113,134	NE68
1012	786	28	3-ethoxy-4-hydroxybenzaldehyde	205,212,222	NE44
1629	0-2069-c	28	3,4-diethoxybenzaldehyde	63,83,148	NE47

Ketones

716	227	28	p-methoxyacetophenone	87,94,98	NE67
910	S-5014	18	4'-methoxypropiophenone	45,105,110	NE67
927	S-5033	18	4'-hydroxypropiophenone	58,59,105	NE45

Ketones

Laboratory Accession Number	Submitter's Chemical Number	Submitter	Chemical Name	Dose Mg/Kg	Effect & Time
1010	898	28	benzil	202,237,245	NE44
1041	1029	28	4'-ethoxyacetophenone	137,209,222	NE70
1287	LF 89	3	4'-chloroacetophenone	47,86,152	NE114
1325	O-754	28	benzophenone	88,101,122	NE66
1505	SBP-33-P RS 2703	10	lobeline, 2-[6-(B-hydroxyphenethyl)-1-methyl-2-piperidyl] acetophenone	44,58,74	NE120
1556	FORM 7	58	benzoin	133,139,184	NE44
1614	O-1946-c	28	2-pivaloyl-1,3-indandione ("PIVAL")	108,191,233	NE92
148	#1-CI	16	2-pivaloyl-1,3-indandione ("PIVAL")	64,121,131	NE21
1700		57	sodium 2-pivaloyl-1,3-indandione ("PIVALYN")	83,161,251	NE46
149	#3-CI	16	1,2,12,12a-tetrahydro-2-isopropenyl-8,9-dimethoxybenzofuro-[4,5-b] [1]benzopyrano [4,3,e] pyran-6(6aH)-one ("ROTENONE CRYSTALS")	95,194,273	NE21

Acids

carboxylic acids

66		15	o-aminobenzoic acid ("ANTHRANILIC ACID")	83,125,144	NE24
69		15	2,6-dihydroxy-4-pyridinecarboxylic acid ("CITRAZINIC ACID")	94,268 176	NE72 S2:35,D27
67		15	abietic acid	71,118,123	NE72
72		15	acetylsalicylic acid ("ASPIRIN," pure)	58,93,111	NE69

carboxylic acids

Laboratory Accession Number	Submitter's Chemical Number	Submitter	Chemical Name	Dose Mg/Kg	Effect & Time
856	N-3663	9	2,5-dichloroterephthalic acid	115,258,296	NE69
931	S-5135	18	4-sulfosalicylic acid	168,194,340	NE43
933	S-4923	18	4-aminosalicylic acid	95,198,237	NE43
1542	SBP-184-P RS 2141	10	4-methoxyacetylsalicylic acid	106,143 109	NE68 D<68
1543	SBP-188-P RS 2170	10	5-methoxyacetylsalicylic acid	92,112,123	NE71
2107	1077-98-1	37	5-nitro-2,3,6-trichlorobenzoic acid	81,154,156	NE24
2109	1055-3	37	2-methyl-3,6-dichlorobenzoic acid	42,83,92	NE24
2110	1057-76	37	2,3,6-trichlorobenzoic acid	70,76,135	NE24
2111	1078-107-10	37	2,4-dichlorobenzoic acid	115,140,196	NE24
2112	1078-107-11	37	3,4-dichlorobenzoic acid	81,149,156	NE24
670	149	28	p-nitrobenzoic acid	157,182,206	NE51

metal and amine salts of carboxylic acids

65		15	lead 10-undecenoate	113,142,179	NE24
924	S-5423	18	potassium 4-aminosalicylate	70,208,210	NE44
940	S-5123	18	calcium 4-aminosalicylate trihydrate	183,216,304	NE45
1276	LF 83	3	sodium salicylate	91,156 266	NE120 D21:30

metal and amine salts of carboxylic acids

Laboratory Accession Number	Submitter's Chemical Number	Submitter	Chemical Name	Dose Mg/Kg	Effect & Time
1548	SBP-199-P RS 2246	10	piperidinium o-chlorobenzoate	95,141,146	NE44

hydrazides

1586	189	3	chloroacetic acid phenylhydrazide	20,20,36 83,255 100	NE70 D<19 S18,D<43

lactones

398	LF 15	3	coumarin (2H-1-benzopyran-2-one) ("COUMARIN")	104,121,152	NE94
1324	O-753	28	coumarin	98,125,141	NE67
1544	SBP-190-P RS 2197	10	4-hydroxycoumarin	66,98,187	NE71
1545	SBP-191-P RS 2201	10	4-acetoxycoumarin	110,111,184	NE72
2137	SBP-438 RT 3133	10	xanthotoxin (6-hydroxy-7-methoxy-5-benzofuranacrylic acid S-lactone) ("AMMOIDIN")	80,91,110	NE42
2139	SBP-440	10	50:50 imperatorin-xanthotoxin ("AMMIDIN-AMMOIDIN")	75,92,92	NE42
2138	SBP-439 RT 3134	10	plant coumarin $C_{21}H_{22}O_7$("SAMMIDIN")	96,130,139	NE42
1698		57	sodium 3-(α-acetonylbenzyl)-4-hydroxycoumarin ("WARFICIDE")	118,195,216	NE46
287	#2-CI	16	3(α-acetonylbenzyl)-4-hydroxycoumarin ("WARFARIN")	99,214,221	NE115
1699		57	sodium 3-(α-acetonylfurfuryl)-4-hydroxycoumarin ("FUMASOL-C")	111,118,138	NE46

lactones

Laboratory Accession Number	Submitter's Chemical Number	Submitter	Chemical Name	Dose Mg/Kg	Effect & Time
2140	SBP-441 RT 3136	10	plant coumarin $C_{12}H_8O_4$("BERGAPTEN")	61,70,74	NE42
2141	SBP-442	10	plant coumarin $C_{13}H_{16}O_5$("PIMPINELLIN")	51,90,93	NE42

Esters

58		15	butyl p-hydroxybenzoate ("BUTOBEN")	55,154,192	NE43
223	BIO 5854	9	bis(2-methyl-2-nitropropyl)phthalate	114,127,157	NE43
643	O-577	28	pentyl salicylate	151,165,201	NE66
687	229	28	methyl anisate	150,167,211	NE120
689	378	28	isopentyl salicylate	111,141,141	NE94
695	262	28	dimethyl phthalate	127,176 176	NE94 D<72
708	195	28	phenyl salicylate	144,150,179	NE70
714	524	28	bis(2-butoxyethyl) phthalate	64,113,172	NE68
955	1776	28	diisopropyl phthalate	118,130,142	NE48
1006	822	28	bis[2-(2-ethoxyethoxy)ethyl] phthalate	120,182,252	NE69
1014	846	28	resorcinol dibenzoate	120,171,274	NE44
1019	976	28	glyceryl phthalate	189,220 325	NE44 D23
1029	1323	28	bis(2-ethoxyethyl)phthalate	236,248,260	NE90

Esters

Laboratory Accession Number	Submitter's Chemical Number	Submitter	Chemical Name	Dose Mg/Kg	Effect & Time
1044	1022	28	methyl anthranilate	184,191,204	NE68
1441	0-1352	28	ethyl benzoate	112,193,225	NE140
1459	0-1648	28	methyl o-benzoylbenzoate	249,296,302	NE120
1470	0-1768	28	butyl hydrogen phthalate	183,213,277	NE140
1508	SBP-40-P 180MP05	10	dipropyl 3-methyl-7,8-methylenedioxy-1,2,3,4-tetrahydronaphthalene-1,2-dicarboxylate	112,124	NE95
1509	SBP-47-P RR 1942	10	methyl N-methylanthranilate	127,137,179	NE94
1511	SBP-67-P RS 2178	10	phenyl o-chloroformylbenzoate	143,152,191	NE94
1599	1805	28	p-tolyl benzoate	77,132,210	NE116
1600	1813-a	28	phenethyl benzoate	66,132,155	NE120
1601	1835-a	28	1,2,4,5-tetrachlorobenzene	75,99 101	NE116 D<114
1603	1841	28	ethyl abietate	135 55,103	NE120 D<20
1626	0-2064-b	28	hexyl benzoate	49,53,163	NE43
1636	0-2126	28	cyclohexyl benzoate	40,57,57	NE45
361	0-329	28	diethyl phthalate	102,106,156	NE48
382	0-1132	28	isopropyl benzoate	53,105,141	NE46
635	0-525	28	methyl benzoate	154,159,183	NE67

Esters

Laboratory Accession Number	Submitter's Chemical Number	Submitter	Chemical Name	Dose Mg/Kg	Effect & Time
652	283	28	dibutyl phthalate	74,74,159	NE43
668	517	28	benzyl salicylate	78,103,159	NE46
971	1746	28	methyl tetradecahydro-7-isopropyl-1,4a-dimethyl-1-phenanthrene carboxylate (methyl tetrahydroabietate)	90,150,170	NE42
64		15	ethyl p-aminobenzoate ("BENZOCAINE")	84,108,170	NE24

Phenols

phenols

119	605	9	2-methyl-4,6-dinitrophenol ("DNC," 40% wettable)	74,217 121	NE43 D<19
213	LF-2	3	2,3,4,6-tetrachlorophenol ("DOWICIDE 6")	132,193,215	NE42
214	LF-1	3	pentachlorophenol ("DOWICIDE 7")	152 295 311	NE46 S23:40,D29 D26
344		39	2,2'-thiobis-(4,6-dichlorophenol) ("VANCIDE BL")	167,175,177	NE70
346		39	2,6-di-tert-butyl-4-methylphenol ("VANLUBE PC")	126,147,164	NE70
358	0-136	28	m-cresol	66,139,155	NE67
360	0-328	28	4-allyl-2-methoxyphenol ("EUGENOL")	67,113,152	NE67
365	0-463	28	bay oils	80,118,144	NE47
384	0-1409	28	4,6-dinitro-o-cresol	11,12,31 16 22 31	NE72 S<21,R<72 S24,D27 D<18

phenols

Laboratory Accession Number	Submitter's Chemical Number	Submitter	Chemical Name	Dose Mg/Kg	Effect & Time
389	LF-4	3	3,4,6-trichloro-2-nitrophenol	37,46 60 61 76	NE72 D<18 D<66 S<66,D<90
390	LF-5	3	2,4-dichloro-6-nitrophenol	188,206 236 243	NE120 D<16 D<21
391	LF-7	3	2-bromo-4-nitrophenol	213,214 221	NE48 D<16
392	LF-8	3	3-bromo-4-nitrophenol	284,313 231	NE48 D<16
393	LF-9	3	2-sec-butyl-4,6-dinitrophenol	2.3,3.4,3.5 5 7 59	NE45 D<17 D<22 S<3,D<22
394	LF-10	3	2-cyclohexyl-4,6-dinitrophenol	75,89 55	NE120 D<72
395	LF-12	3	2-chloro-4,6-dinitrophenol	40,51,59 99 188 194	NE68 S21,D<48 D<70 S21,D24
460		2	o-butylphenol	70,85,121	NE47
584		2	tetrachlorophenol	244 242	NE47 D<20
585		2	p-(3-hydroxy-3-methylbutyl)phenol	132,145,157	NE46
640	0-137	28	o-cresol	72,93,194	NE66

Laboratory Accession Number	Submitter's Chemical Number	Submitter	Chemical Name	Dose Mg/Kg	Effect & Time
642	0-106	28	1-naphthol	138,191,255	NE48
650	60	28	4-tert-butyl-2-chlorophenol	71,146,149	NE44
662	126	28	p-tert-butylphenol	134,156,200	NE51
663	144	28	2,3,4,6-tetrachlorophenol	220,222,248	NE51
678	134	28	pentachlorophenol	120,181,216	NE120
688	459	28	4-tert-pentyl-2,6-dichlorophenol	204,228,270	NE120
692	145	28	2-bromo-4-phenylphenol	121,182,231	NE90
704	101	28	4,6-dibromo-cresol	151,323 313	NE90 S<19,D<72
707	157	28	2-cyclohexyl-4,6-dinitrophenol	170,183,192	NE70
709	75	28	4-chloro-m-cresol	168,264,328	NE72
710	120	28	6-chlorothymol	100,144,182	NE70
875	LF 6	3	2,4-dibromo-6-nitrophenol	9,13 22,80,156 64,84,179,229	NE48 S<19,R<48 D<17
878	LF 44	3	4-tert-butylpyrocatechol	73,100,162	NE43
949	XS-5123	18	m-aminophenol	316 229 163	NE117 S2,R<117 S2,D<117
977	1122	28	2-sec-butyl-4,6-dinitrophenol	7,12,14 110 6.5 8 13,21,34	NE72 S<24,R<44 D<48 D<25 D<18

phenols

Laboratory Accession Number	Submitter's Chemical Number	Submitter	Chemical Name	Dose Mg/Kg	Effect & Time
982	792	28	8-quinolinol	115,258,265	NE43
987	841	28	p-methoxyphenol	240,334,400	NE95
1021	1553	28	3,5-xylenol	179,206,207	NE94
1024	1635	28	2,4-dinitrophenol	131 183 276	D<93 D<21 D3:30
1040	1535	28	2,4-dinitrophenol	157,275 134,173 216 203	NE70 D<18 D<21 D<120
1268	LF 109	3	2-sec-butyl-4,6-dinitrophenol, compound with mixed polyethylene polyamines	3,6,9 4.5,11 11,35,50	NE144 D<21 D<18
1277	LF 111	3	4-sec-butyl-α-(dimethylamino)-o-cresol	50,60,113	NE116
1294	LF-100	3	2-tert-butyl-4,6-dinitrophenol	82,89 126	NE115 D<17
1295	LF-125	3	4-nitro-3-trifluoromethylphenol	116 131 287	NE114 S<18-144 D<17
1296	LF-72	3	p-sec-butylphenol	60,73,193	NE114
1300	LF-68	3	4-tert-butyl-2-phenylphenol	89,114,160	NE90
1304	LF-74	3	4-sec-butyl-2,6-dinitrophenol	8,14,22 2 13,30 81,91	NE120 S<19,D<96 D<19 D<21
1308	LF-71	3	2,4-dinitro-6-phenylphenol	148,243 119	NE92 D<19

phenols

Laboratory Accession Number	Submitter's Chemical Number	Submitter	Chemical Name	Dose Mg/Kg	Effect & Time
1310	LF-80	3	2,6-dinitro-4-chlorophenol	76,136,280	NE90
1312	LF-70	3	p,p'-biphenol	33,66,99	NE67
1316	LF-75	3	4-tert-butyl-2,6-dinitrophenol	104 101 140	NE67 D<67 D21
1318	LF-73	3	4,6-dinitro-2-isopropylphenol	8,12 10,17 10,23	NE44 D<22 D<44
1397	LF-142	3	4-cyclohexyl-2,6-dinitrophenol	88,91 252	NE66 D<17
1401	LF-146	3	catechol	70 134 248	D<18 S<18,S21 S1,D<18
1411	LF-118	3	5-chloro-2-nitrophenol	53,66,100	NE66
1476	156	3	4,6-dinitro-o-cresol	58,88 175	NE41 D<16
1479	159	3	2,6-dinitro-p-cresol	112 191,229	NE41 D 16
1512	SBP-69-P RS 2705	10	1-naphthol	96,175,237	NE93
1516	SBP-85-P RS 2706	10	2,4,6-trichlorophenol	155,181,203	NE43
1520	SBP-97-P RS 2217	10	3,4-xylenol	133,148,167	NE44
1521	SBP-98-P RS 2109	10	p-(1,1,3,3-tetramethylbutyl)phenol	81,144,175	NE44
1396	LF-141	3	2,4-dinitrophenol	13,14 58 73	NE72 S41,D65 S<41,D44

Laboratory Accession Number	Submitter's Chemical Number	Submitter	Chemical Name	Dose Mg/Kg	Effect & Time
1522	SBP-99-P RS 2110	10	2,6-dimethoxyphenol	115,119,152	NE44
1526	SBP-122-P RS 2117	10	1,5-naphthalenediol	179,183,212	NE44
1528	SBP-124-P RS 2119	10	8-quinolinol	97,157,233	NE44
1532	SBP-145-P RS 2231	10	o-phenylphenol	139,250,269	NE44
1533	SBP-147-P RS 2232	10	p-phenylphenol	157,229,292	NE44
1534	SBP-166-P RS 2161	10	4-nitro-3-trifluoromethylphenol	120,159,282	D<19
1540	SBP-180-P RS 2133	10	4-acetamido-3-trifluoromethylphenol	101,103,152	NE72
1578	181	3	picric acid	>50 >50 >50	NE67 S18,R<67 S18,D25:30
1589	17432	28	2,4-dinitro-6-phenylphenol	38,132 59	NE43 D<18
1590	19044	28	4-tert-butyl-2,6-dinitrophenol	110 86 98	S<24,R<144 S24,D<40 D<7
1613	1931-b	28	p-benzylaminophenol	105,106,162	NE92

phenols

Laboratory Accession Number	Submitter's Chemical Number	Submitter	Chemical Name	Dose Mg/Kg	Effect & Time
2160		57	pentachlorophenol	173 228,230	NE120 S<22-120
2200	LF 236	3	2-nitroso-1-naphthol	25,29,59	NE120
2202	LF 238	3	1,4-naphthalenediol	27,29,41	NE120
2203	LF 239	3	4-amino-1-naphthol hydrochloride	29,35,39	NE120
655	81	28	2-naphthol	175,181,194	NE46

metal and amine salts of phenols

45		3	sodium p-phenylphenoxide ("DOWICIDE A")	37,135,193	NE22
1588	O-16418	28	sodium pentachlorophenoxide	66,172 86	NE43 D<7
327	70537	38	10% copper 8-quinolinolate, 90% inert ingredients ("QUINDEX EMULSION BASE")	74,82,114	NE92
328	75174	38	10% copper 8-quinolinolate; 90% inert ingredients ("QUINDEX")	50,81,99	NE72
1539	SBP-179-P RS 2131	10	methylammonium 4-nitro-3-trifluoromethylphenoxide	81 101	S0:55,D1:35 S<1:30,D1:40
2199	LF 235	3	copper (II) 8-hydroxyquinoline	64,71,87	NE96
333	74373	38	alkyl(av.=C_{12}) amine salts of tetrachlorophenol ("FUNGITROL 617")	74,97,133	NE72

Quinones and Hydroquinones

Laboratory Accession Number	Submitter's Chemical Number	Submitter	Chemical Name	Dose Mg/Kg	Effect & Time
98	ME 6899	9	tetrachloro-p-benzoquinone ("CHLORANIL")	85,94,94	NE30
397	LF 14	3	p-hydroquinone	144 155 188	S5:45,D<46 S3:20,D<21 S3:20,D<22
1286	LF 86	3	2,5-diamono-3,6-dichloro-p-benzoquinone	65,80,192	NE116
1292	LF-113	3	1,4-naphthoquinone	73,132 153	NE114 D<71
1306	LF-82	3	chloranil	115,117,242	NE68
1317	LF-76	3	disodium salt of 2,5-dichloro-3,6-dehydroxy-p-benzoquinone	135,147,147	NE67
1375	LF-130	3	2,5-dichloro-3,6-diphenoxy-p-benzoquinone	35,103,121	NE139
1480	160	3	2,6-dichloro-p-benzoquinone	222,233,247	NE41
1493	174	3	tetrachloro-o-benzoquinone	95,123,187	NE42
129	284	9	2,3-dichloro-1,4-naphthoquinone ("PHYGON")	46 57 60	NE96 S52,R<96 S<48,D52
1293	LF-120	3	chlorohydroquinone	138 74 110 174,178	NE114 D<71 D<18 S1,D2:20
1305	LF-121	3	2,6-dimethoxyhydroquinone	118 127,140	NE68 D<19
1488	169	3	x,x-dichlorohydroquinone	135,170,196	NE41

Ethers

Laboratory Accession Number	Submitter's Chemical Number	Submitter	Chemical Name	Dose Mg/Kg	Effect & Time
355	0-31	28	x,x-dichloro(phenyl ether) positions are unknown	92,95,132	NE67
646	0-42	28	anisole	93,97,97	NE46
679	228	28	p-phenylanisole	113,126,187	NE120
686	189	28	p-nitroanisole	140,196,203	NE120
693	184	28	2,4-dinitroanisole	117,214,270	NE66
1289	LF 81	3	2,4-dinitroanisole	52,61,320	NE114
1301	LF-106	3	dl 1-methylpropyl phenyl ether ("POLYGLYCOL 89-1")	62,92,163	NE92
1313	LF-85	3	2,4-dinitrophenetole	87,106,124	NE67
1322	0-749	28	phenyl ether	77,99,198	NE66
1486	167	3	sodium salt of dodecylated, sulfonated phenyl ether	67,75,101	NE41
1632	0-2098-b	28	allyl p-cyclohexylphenyl ether	60,69,121	NE46
370	0-574	28	p-propenylanisole	59,82,129	NE46
378	0-729	28	p-propenylanisole	105,119,131	NE42
377	0-707	28	2,4-dinitrophenetole	105,132,135	NE42
625	0-230	28	o-nitroanisole	63,94,137	NE68

Amides

1710		58	N.N-dicyanoethyl benzenesulfonamide	93,104 121	NE113 S24,R<113
718	69	28	4'-aminoacetanilide	91,151,165	NE70
731	LF 65	3	3,5-dinitro-o-toluamide	138,153,269	NE46

Amides

Laboratory Accession Number	Submitter's Chemical Number	Submitter	Chemical Name	Dose Mg/Kg	Effect & Time
891	S-566	18	4'-hydroxynonananilide	91,104,107	NE42
890	S-5381	18	4'-hydroxydodecanilide	69,133 98	NE42 D-42
892	S-5382	18	4'-hydroxyoctadecanilide	25,58,78	NE42
899	S-564	18	N-methylformanilide	97,130,160	NE71
923	S-4016	18	p-hydroxyacetanilide	81,116,195	NE44
937	S-565	18	4'-hydroxybutananilide	128,134,166	NE44
1004	1016	28	N-pentylbenzamide	131,141,162	NE70
1009	854	28	acetoacetanilide	59,146,166	NE44
1046	1205	28	N,N-dibutylbenzamide	93,124,143	NE68
1361	1031	28	benzamide	41,55,145	NE48
1535	SBP-168-P 60 MS	10	p-hydroxyacetanilide	158,226,262	NE45
1536	SBP-169-P NST-1088	10	phenacetin (p-acetophenetidide)	69,228,262	NE68
1537	SBP-170-P 29 MS	10	salicylamide	95,102,115	NE70
1598	1799	28	p-bromoacetanilide	214,253	NE120
1612	1927-a	28	1'-chloroacetoacetanilide	172,223,343	NE92
2148	LF 193	3	3,4'5-tribromosalicylanilide 80% (approx.) 3,5-dibromosalicylanilide 20% (approx.)	69,70,113	NE44

Amides

Laboratory Accession Number	Submitter's Chemical Number	Submitter	Chemical Name	Dose Mg/Kg	Effect & Time
986	783	28	p-acetophenetidide	234,243,271	NE95
1710		58	N.N-dicyanoethyl benzenesulfonamide	93,104 121	NE113 S24,R<113

Amines

74		15	diphenylamine	68,93,138	NE22
73		15	o-nitroaniline	163,177,189	NE22
63		15	4,4'-diaminobiphenyl ("BENZIDINE")	152,210,221	NE26
631	0-85	28	1-naphthylamine	91,109 200	NE70 D<60
647	0-698	28	N-nitrosodiphenylamine	162,171,195	NE46
680	124	28	4-biphenylamine	126,139,182	NE120
683	529	28	N-phenyl-2-naphthalylamine	79,134,169	NE120
696	710	28	p-phenylenediamine	125,145 221	D<72 D<19
720	LF 53	3	4,4'-methylenedianiline	121,133,229	NE67
1005	1373	28	N-methyl-N-nitrosoaniline	147,152 134	NE70 S2:20,D<70
1013	757	28	N-nitroso-N-phenylbenzylamine	127,142,175	NE44
1015	781	28	diphenylamine	115,168,212	NE44
1284	LF 117	3	2-chloro-N,N-diethyl-4-nitroaniline	142,174 128	NE115 D<113

Amines

Laboratory Accession Number	Submitter's Chemical Number	Submitter	Chemical Name	Dose Mg/Kg	Effect & Time
1303	LF-119	3	N-(pentachlorophenyl)ethylenediamine	88,164,220	NE92
1327	O-756	28	2-biphenylamine	128,134,228	NE44
1329	O-758	28	N-nitrosodiphenylamine	145,161,250	NE43
1372	LF-127	3	N,N-dimethylaniline	34,37,101	NE139
1373	LF-128	3	o-phenylenediamine	67,94,194	NE139
1374	LF-129	3	p-phenylenediamine	110,133 140	NE139 S<19-144
1402	LF-147	3	aniline	81,113,150	NE94
1403	LF-148	3	3,4-dichloroaniline	82,90,190	NE72
2129		39	Mixture: 50 parts N-phenyl-2-naphthylamine 25 parts: 4-isopropoxydiphenylamine 25 parts: N,N'-diphenyl-o-phenylenediamine ("AGERITE HIPAR")	113,137,140	NE46
2130		39	Mixture: 65 parts: N-phenyl-2-naphthylamine 25 parts N,N-diphenyl-p-phenylenediamine ("AGERITE HP")	128,130,161	NE46
2131		39	N-phenyl-2-naphthylamine ("AGERITE POWDER")	106,125,163	NE46
2132		39	1-naphthylamine (aldol is 3-hydroxybutyraldehyde) ("AGERITE RESIN")	146,150,172	NE46
2134		39	Mixture of octylated diphenylamines ("AGERITE STALITE")	55,84,120	NE46
2135		39	N,N-'-di-2-naphthyl-p-phenylenediamine ("AGERITE WHITE")	63,105,111	NE46

Amines

Laboratory Accession Number	Submitter's Chemical Number	Submitter	Chemical Name	Dose Mg/Kg	Effect & Time
279	C-178	31	1,3,5-trinitrobenzene-aniline complex	158,164,256	NE42
283	C-24	31	2,3,4,5,6-pentachloroaniline	114,162,212	NE117
284	C-44	31	2,3-dichloro-4,6-dinitroaniline	49,61,84	NE117
285	C-179	31	2,4,6-trinitritoluene-aniline complex	101,185,196	NE117

Diazo Compounds

diazonium salts

1417	W-9-197B	19	2,5-dichlorobenzenediazonium hexafluorophosphate	157,226,250	NE68
1418	W-9-197A	19	3,4-dichlorobenzenediazonium hexafluorophosphate	188,219 330	NE68 S244,D268
1419	W-9-124A	19	2,4,6-trichlorobenzenediazonium hexafluorophosphate	135,261,285	NE68
1420	W-9-126	19	2,4,6-tribromobenzenediazonium hexafluorophosphate	214,267,276	NE68
1421	W-9-195	19	o-chlorobenzenediazonium hexafluorophosphate	84,180,215	NE68
1256	P-5-2	3	p-chlorobenzenediazonium hexafluorophosphate	136,224 268	NE144 D17

azobenzenes

99	N-5489	9	azobenzene	63,140,166	NE23
71		15	azobenzene	43,50,67	NE70

Nitriles

698	557	28	phthalonitrile	67,87,110	NE89

Sulfur Compounds

Laboratory Accession Number	Submitter's Chemical Number	Submitter	Chemical Name	Dose Mg/Kg	Effect & Time
961	981	28	sodium isopropyl naphthalenesulfonate ("AEROSOL OS")	208,262,298	NE47
1602	1839-b	28	3,4-dichloro-N-(p-nitrophenyl)benzenesulfonamide	26,55,55	NE68
85		25	N^4-acetyl-N^1-(p-nitrophenyl)sulfanilamide	89,91,95	NE25
260	BIO 5855	9	2-methyl-2-nitropropyl p-toluenesulfonate	99,131,178	NE47
120	782	9	p-chlorophenyl p-chlorobenzene sulfonate ("OVOTRAN")	84,121,274	NE68
1000	1386	28	bis(p-chlorophenyl)sulfone	200,234,298	NE70

Heterocyclics

heterocyclics

33		39	zinc 2-benzothiazolyl mercaptide ("ZETAX")	97,107,120	NE72
34		39	2-mercaptobenzothiazole ("CAPTAX")	79,106,176	NE48
36		39	1-dodecylpyridinium salt of 2-mercaptobenzothiazole ("VANCIDE 26 EC," 25% assay)	63,82 114	NE44 S19,D22:50
37		39	sodium N,N-dimethyldithiocarbamate (82.8%) and 2-mercaptobenzothiazole (7.2%) ("DRY VANCIDE 51")	10,12 29 23,25	S<24-120 S<24:40,D<21 S3,D<9
38		39	sodium 2-benzothiazolyl mercaptide ("NACAP")	164 211 338	SO:45,R2:30 SO:25,R2:30 SO:15,R2:20
312	MA 464	7	1-piperonyl-6,7-methylenedioxy-1,2,3,4-tetrahydroisoquinoline hydrochloride	86,105,122	NE41
316	#137	20	1,2,3,4,6,7,8,9,10,10,11,11-dodecachloro-1,4,4a,5a,6,9,9a,9b-octahydro-1,4,6,9-dimethonodibenzothiophene	139,229,282	NE96
340		39	2-thio-4,4,6-trimethyltetra-hydropyrimidine ("THIATE A")	99,119,139	NE43
412	LF-29	3	x-chlorodibenzofuran	123,156,244	NE91
629	O-634	28	carbazole	133,190,195	NE70

heterocyclics

Laboratory Accession Number	Submitter's Chemical Number	Submitter	Chemical Name	Dose Mg/Kg	Effect & Time
630	0-39	28	dibenzofuran	65,84,186	NE70
633	0-43	28	dibenzothiophene	168,176,351	NE70
732	LF 66	3	2,5-dibromo-3,4-dinitrothiophene	293,306,382	NE46
918	S-5361	18	6,7-diethoxy-1-(3,4-diethoxybenzyl)isoquinoline hydrochloride	96,168,168	NE44
1315	LF-87	3	2-aminothiazole	65,83,144	NE67
1413		57	3-(acetoxymercuri)pyridine ("PMA")	74,230 405	NE68 D<43
1497	SBP-25-P RS 2696	10	6-hydroxy-7,8-dimethoxy-1,2,3,4-tetrahydro-isoquinoline ("ANHALAMINE")	101,119,124	S<19,R<120
1501	SBP-29-P RS 2700	10	isopimpinellin (4,9-dimethoxy-7H-furo [3,2-g] [1] benzopyran-7-one	127,128,147	NE120
1503	SBP-31-P RS 2701	10	4,9-dimethoxy-7-methyl-5H-furo [3,2-g] [1] benzopyran-5-one ("KHELLIN")	55,59,76	NE120
2147	LF 2-3	3	8-quinolinol sulfate	48 97,158	S4-72 S4,D<20
330	71548	38	sodium salt of mercaptobenzothiazole 50%; 50% inert ingredients ("NUODEX 84")	67,94 121	NE72 S1:30,D<72
374	0-636	28	2-phenylbenzothiazole	53,83,127	NE43
1042	1241	28	quinoline	66,147,152	NE70
2133		39	polymerized trimethyldihydroquinolines ("AGERITE RESIN D")	68,78,104	NE46

alkaloids

Laboratory Accession Number	Submitter's Chemical Number	Submitter	Chemical Name	Dose Mg/Kg	Effect & Time
54		15	1,3,7-trimethylxanthine ("CAFFEINE")	45,78,91	NE41
56		15	3,7-dimethylxanthine ("THEOBROMINE")	86,112,158	NE24
55		15	quinine	7,27,24	NE25
57		15	cinchonine	101,123,163	NE24
59		15	cinchonidine	79,82,91	NE43
78		15	1-methyl-2-(3-pyridyl)pyrrolidine ("NICOTINE," pure)	77 118 176	S1,R2:30 S1,D2 S0:45,D1:55
111	122	9	3-(1-methyl-2-pyrrolidyl)pyridine sulfate ("NICOTINE SULFATE" 40%)	101 68,203	S<1:50,R<24 D<1:55
112	199	9	3-(1-methyl-2-pyrrolidyl)pyridine ("NICOTINE," 99%)	36 79 137	S<1:45,R2:45 S<1:40,D3:55 S<1:35,D5:35
80		33	strychnine sulfate	4 5 6 27 8,11	NE140 S<2,R<24 S<20,R<148 S1:45,R115 S2:30,D3:15
70		15	brucine	83,91,94	NE72
61		15	cinchona alkaloid mixture	113,114,137	NE27
1498	SBP-26-P RS 2697	10	tert-bases of barberry root	62,64,83	NE120
1499	SBP-27-P RS 2698	10	berbamine	127,175 138	NE120 D<43

alkaloids

Laboratory Accession Number	Submitter's Chemical Number	Submitter	Chemical Name	Dose Mg/Kg	Effect & Time
1500	SBP-28-P RS 2699	10	hypaphorine	149 161	D<67 S<24,D<43
1504	SBP-32-P RS 2702	10	protoveratrine	30,33,39 102,105	NE72 D<19
1506	SBP-34-P RS 2704	10	veratrine	5,14,29 9,9 22 35	NE72 S<3:10,D<4:4 D<17 S<3:10,D<21
1552	SBP-226-P RS 2692	10	Total alkaloid fraction of lobella	3.5,17 12 52,65	NE48 S<22,R<48 D<22
2195		57	cocculus indicus ("CACKLEBERRY")	12,27 38	D<21 D<48

antibiotics

1496	SBP-24-P RS 1911	10	tyrocidine (mixture of A and B)	145,150,212	NE120

Dyes

125	1064	9	chrome yellow	136,215,343	NE68
126	1015	9	chrome green	141,273,277	NE68
127	648	9	safranine A	112,117,122	NE67
128	602	9	permansa green	45,67,75	NE22

Dyes

Laboratory Accession Number	Submitter's Chemical Number	Submitter	Chemical Name	Dose Mg/Kg	Effect & Time
975	1259	28	paris green	203,410	NE43

ALLICYCLICS

Cyclohexanes

114	304	9	1,2,3,4,5,6-hexachlorocyclohexane(mixture) (25% miscible)	53,69,167	NE20
115	404	9	1,2,3,4,5,6-hexachlorocyclohexane(mixture) (25%wettable)	75,77,104	NE19
93	N-3302	9	β-1,2,3,4,5,6-hexachlorocyclohexane	123,212,281	NE25
95	N-3301	9	α-1,2,3,4,5,6-hexachlorocyclohexane	184,196,221	NE24
96	N-3303	9	γ-1,2,3,4,5,6-hexachlorocyclohexane ("LINDANE")	155,224,237	NE24
44		42	1,2,3,4,5,6-hexachlorocyclohexane ("LINDANE")	167,225,369	NE24
91	N-3304	9	Δ-1,2,3,4,5,6-hexachlorocyclohexane	98,188 177	S5-120 S4:15,D102

Cyclopentadienes

101	832	9	1,2,3,4,10,10-hexachloro-1,4,4a,5,8,8a-hexahydro-1,4,5,8-dimethanonaphthalene ("ALDRIN," 24% miscible)	97,107,184	NE27
144	670	9	1,2,3,4,10,10-hexachloro-1,4,4a,5,8,8a-hexahydro-1,4,5,8-dimethanonaphthalene ("ALDRIN," 90%)	100,180,212	NE48
142	851	9	1,2,3,4,10,10-hexachloro-6,7-epoxy-1,4,4a,5,6,7,8,8a-octanydro-1,4,5,8-dimethanonaphthalene ("ENDRIN," 21.7% miscible)	49 39 104	S<23,R<48 S<22,D<46 S<18,D<43

Cyclopentadienes

Laboratory Accession Number	Submitter's Chemical Number	Submitter	Chemical Name	Dose Mg/Kg	Effect & Time
143	880	9	1,2,3,4,10,10-hexachloro-6,7-epoxy-1,4,4a,5,6,7,8,8a-octahydro-1,4,5,8-dimethanonaphthalene ("ENDRIN," 91%)	95,99 111	NE72 S3:30,D<45
150		23	1,2,3,4,10,10-hexachloro-6,7-epoxy-1,4,4a,5,6,7,8,8a-octahydro-1,4,5,8-dimethanonaphthalene ("ENDRIN," 95%)	6,7,56 21 9 8,16	NE168 S27,R<309 S<19,D<90 S<21,D<90
124	722	9	1,4,5,6,7,8,8-heptachloro-3a,4,7,7a tetrahydro-4,7-methanoindene ("HEPTACHLOR," 30% miscible	48,73,187	NE70
146	719	9	1,4,5,6,7,8,8-heptachloro-3a,4,7,7a-tetrahydro-4,7-methanoindene ("HEPTACHLOR")	136,174,184	NE47
151		23	1,4,5,6,7,8,8-heptachloro-3a,4,7,7a-tetrahydro-4,7-methanoindene ("HEPTACHLOR," 72%, related cpds. 28%)	124,134,143	NE120
152		23	1,2,4,5,6,8,8-octachloro-3a,4,7,7a-tetrahydro-4,7-methanoindane ("CHLORDANE," 60%, related cpds. 40%)	81,93,395	NE24
147	1121	9	1,2,4,5,6,8,8-octachloro-3a,4,7,7a-tetrahydro-4,7-methanoindane ("CHLORDANE," 45% miscible)	59,288 101	NE48 D4:50
113	4	9	1,2,4,5, 6, 8 ,8-octachloro-3a,4,7,7a-tetrahydro-4,7-methanoindane ("CHLORDANE")	107,181,482	NE20
103	833	9	1,2,3,4,10,10-hexachloro-6,7-epoxy-1,4,4a,5,6,7,8,8a-octahydro-1,4,5,8-dimethanonaphthalene ("DIELDRIN," 18.6% miscible)	91,215	NE27
90	706	9	1,2,3,4,10,10-hexachloro-6,7-epoxy-1,4,4a,5,6,7,8,8a-octahydro-1,4,5,8-dimethanonaphthalene ("DIELDRIN")	192,219,293	NE24
92	762	9	1,2,3,4,10,10-hexachloro-6,7-epoxy-1,4,4a,5,6,7,8,8a-octahydro-1,4,5,8-dimethanonaphthalene ("DIELDRIN," 50% wettable)	93,94,99	NE96
42		42	1,2,3,4,9,10-hexachloro-6,7-epoxy-1,4,4a,5,6,7,8,8a-octahydro-1,4,5,8-dimethanonaphthalene ("DIELDRIN")	57,216,273	NE24

Cyclopentadienes

Laboratory Accession Number	Submitter's Chemical Number	Submitter	Chemical Name	Dose Mg/Kg	Effect & Time
313	#102	20	2,3,3a,4,5,6,7,7a-octachloro-3a,4,7,7a-tetrahydro-4,7-methanoindene	145,173 154	NE41 D<17
318	#101	20	1,2,3,4-tetrachlorocyclopentadiene	174,279 257	NE95 D<4:30
1038	1256	28	decahydronaphthalene	106,146 158	NE71 S1:30,R<71

Terpenes

371	0-616	28	clove oil	95,97,107	NE46
372	0-631	28	geranium oils	79,93 58	NE46 D<45
379	0-747	28	lemon oils	74,84,113	NE42
711	565	28	citronella oil	55,108 104	NE68 S<44,D53

INORGANICS

Halogens

880	LF 46	3	iodine	400,465,535	NE46

Salts

fluorides

155	M-4-89	19	tin(II) chlorofluoride	420,470,576 1?2 250	NE24 D71 D<23
159	W-9-24	19	zinc fluoride tetrahydrate	102,201,233	NE48

fluorides

Laboratory Accession Number	Submitter's Chemical Number	Submitter	Chemical Name	Dose Mg/Kg	Effect & Time
162	W-8-150A	19	potassium fluoride. stannous fluoride	107,136,139	NE21
165	E-4-164B	19	tin(II) fluoride	344,439,459	NE22
167	W-8-188	19	potassium fluoride	110,113,156	NE48
168	W-10-105A	19	dimethyltin fluoride	74,82 169	NE48 D<21
170	W-9-21	19	potassium fluoride. nickel fluoride	135,177 239	NE45 S48,D51
179	MK	19	sodium fluoride	252,281,285	NE45
193	W-11-89	19	dibutyltin fluoride	103,183,258	NE50
195	B-1-5	19	ammonium aluminohexafluoride	136,221,228	NE48
196		19	calcium fluoride ("FLUORITE")	324,341,431	NE24
197		19	sodium aluminohexafluoride	342,479,668	NE24
202	W-8-37A	19	ammonium hexafluorophosphate fluoride	149 286,298	S4,D<22 D<4
1250	HH-3-126	3	hydrazinium trifluorostannite	160,451 202 325 435	NE120 S27,D<45 S52,D67 D21
1249	HH-3-171	3	ferrous trifluorostannite heptahydrate	103,365 431	NE168 S27:30,D<45
1253	HH-3-158	3	iron heptafluoride tetrahydrate	28,68 105	NE120 S<120
1254	HH-3-73	3	potassium hexafluoroarsenate	362,412 300	NE168 D21

fluorides

Laboratory Accession Number	Submitter's Chemical Number	Submitter	Chemical Name	Dose Mg/Kg	Effect & Time
1255	HH-3-39	3	sodium hexafluoroarsenate	152	D<48
				415	D41
				502	D17
1389	HH-4-138	19	potassium monohydroxypentafluoroarsenate	372	NE168
				78	S50,D<120
				133	S<20,D22
				236,316,511	D<21
1392	HH-3-109	19	ammonium trifluorostannite	130,153,261	NE48
				642	D2:30
1393	HH-3-172	19	sodium trifluorostannite	109,128,377	NE46
1394	HH-3-125	19	zinc trifluorostannite	150,180,378	NE46
1701	HH-5-97	19	lithium fluorostannite	365	NE168
				462	D<18
				467	S<18,D<120
1702	HH-5-99	19	lithium trifluorostannite	14,48,75	NE72
				164	D<120
				597	D<18

fluoro-silicates

171	W-11-153A	19	copper (II) hexafluorosilicate tetrahydrate	236,327	S<4,R<24
				141	S2:30,D<21
				172	D<18
				246,279	D<44

fluoro-vanadates

176	W-6-186	19	ammonium hexafluorovanadate (V)	9,18,29	NE168
				66	S<18,R<192
				134	S<18,D<90
				213	S1:45,D<18

fluoro-vanadates

Laboratory Accession Number	Submitter's Chemical Number	Submitter	Chemical Name	Dose Mg/Kg	Effect & Time
1703	HH-5-104	19	ammonium dioxydifluorovanadate	104,201 136	D<18 D<120

fluoro-phosphates

153	HH-1-93	19	sodium monofluorophosphate	191,309,393	NE24
158	H-4-126	19	sodium phenyl monofluorophosphate	45,76,90	NE45
161	H-4-86	19	sodium isopropyl monofluorophosphate	90,120,141	NE21
178	G-4-87,90	19	cupric monofluorophosphate	20,93,99 25,176,242,471 111 183,578	NE432 S<22,R<432 S<300,D330 S<22,D<94
190	HH-2-39	19	potassium difluorophosphate	175,176 302	NE29 S3,D6
194	W-7-147A	19	sodium dodecyl monofluorophosphate	86,122,221	NE48
199	W-6-197	19	lead monofluorophosphate	741,907,962	NE24
200	W-7-4	19	silver monofluorophosphate	246,429	NE24
1258	HH-3-147	3	ammonium hexafluorophosphate	285,308 108	D<17 S<17,D67
1388	HH-3-135	19	potassium hexafluorophosphate	151 221 278	NE168 S22,D25 D<20

fluoro-borates

Laboratory Accession Number	Submitter's Chemical Number	Submitter	Chemical Name	Dose Mg/Kg	Effect & Time
160	W-11-119	19	ammonium tetrafluoroborate	78,168 95	NE21 S2:45,D<28
186	W-7-93A	19	potassium tetrafluoroborate	168,329 312	NE47 D<21

fluoro-titanates

198	R-1-10	19	ammonium fluorotitanate (IV)	183,288 185	NE25 D<20
1385	HH-4-108	19	lithium hexafluorotitanate	59,90 80 212 275	NE96 S<18-96 S<44,D<51 S25:30,D<51

fluoro-stannates

203	M-4-36	19	copper (II) fluorostannate (IV)	399 252 435	S3:50,R<22 D<22 S<22,D24
1386	HH-4-119	19	potassium hexafluorostannate	185 212 764	NE168 D<120 D<165
1704	HH-5-106	19	lead hexafluorostannate	64,81,119 229,251	NE72 D<43
1705	HH-5-107	19	cobalt fluorostannate	161 174 193	D<6 S<43,D45 S<43,D46

fluoro-stannates

Laboratory Accession Number	Submitter's Chemical Number	Submitter	Chemical Name	Dose Mg/Kg	Effect & Time
1706	HH-5-108	19	nickel fluorostannate	154 186 232	NE216 D<18 S<18,D<120
1707	HH-5-109	19	bismuth fluorostannate	434 369 374	NE216 S<18,D<43 D<120
1708	HH-5-110	19	iron fluorostannate	39,46,54 148 148	NE70 D<18 S25,D<120

miscellaneous salts

130	111	9	sodium polysulfide	496 243 111 113	NE192 S<51,R<168 D<21 S<51,D75
105	775	9	sodium arsenite	305 156 232 370	NE20 D2:40 S1:20,D<18 S1:50,D<18
166	W-9-186	19	ammonium hexafluoroferrate	148,277 131	NE46 D<22
672	277	28	zinc oxide	228,251,262	NE52
724	LF 58	3	sodium 1-chloro-2-hydroxy-2-propanesulfonate	102,109,132	NE42
860	N-553	9	cupric disulfitocuprite dihydrate	296,358,450	NE70
881	LF 47	3	potassium bromate	260,403 397	NE41 D<41
884	LF 50	3	sodium azide	135,198,340	D<17

miscellaneous salts

Laboratory Accession Number	Submitter's Chemical Number	Submitter	Chemical Name	Dose Mg/Kg	Effect & Time
1050	1165	28	calcium arsenite	183,294,371	NE46
1369		57	cobalt chloride	228 234,247	NE168 D<137
1412		57	calcium hypochlorite ("HTH")	120,206 268	NE68 S<68
1415	HH-4-166A	19	lithium fluoride	126,185,245	NE68
1416	HH-4-166B	19	lithium carbonate	244,262,427	NE68
2159		57	arsenic trioxide	240,246,430	NE120
			Acids		
104	179	9	arsenic acid	136,279	D<18
			MISCELLANEOUS		
1182	N-911	9	Structure still not proven.	158,166,196	NE43
1414		57	soybean meal	103,236,245	NE68
1473		57	castor oil	90,118,122	NE44
2125		10	castor bean	93,112,163	NE48
2126		10	jequirity seed	98,151,173	NE48
706	472	28	pennyrcyal oils	62,129 102	NE90 D<88
939	XS-5723	18	90% dialdehyde starch - 10% starch	106,122,165	NE46

MISCELLANEOUS

Laboratory Accession Number	Submitter's Chemical Number	Submitter	Chemical Name	Dose Mg/Kg	Effect & Time
964	1570	28	resins, vinsol	179,285,323	NE47
985	777	28	soybean oils	149,155,155	NE43
1016	778	28	peanut oils	126,151,154	NE43
1030	1733	28	rape oil	109,131,179	NE66
1171	N-869	9	Structure still not proven.	62	NE168
				91	S<21,R<24
				219,236	D<21

Table 2. Trivial and trade names of screened compounds.

Name	Page
AEROSOL OS	105
AGERITE HIPAR	103
AGERITE HP	103
AGERITE POWDER	103
AGERITE RESIN	103
AGERITE RESIN D	106
AGERITE STALITE	103
AGERITE WHITE	103
ALDRIN	109
AMMIDIN-AMMOIDIN	89
AMMOIDIN	89
ANABASINE	68
ANHALAMINE	106
ANTHRANILIC ACID	87
AQUALIN	63
ARAMITE	46
ASPIRIN	87
BARTHANE	30
BENZIDINE	102
BENZOCAINE	92
BERGAPTEN	90
BISMATE	47
BULAN	10
BUTOBEN	90
BUTYL NAMATE	46
BUTYL ZIMATE	47

Name	Page
CACKLEBERRY	108
CAFFEINE	107
CAPRAMIDE	72
CAPTAN	73
CAPTAX	105
CHLORANIL	99
CHLORDANE	110
CHLOROBENZILATE 25W	27
CITRAZINIC ACID	87
CO-RAL	42
COUMARIN	89
CUMATE	46
DDD	14
DDT	13
DDVP	32
DNC	92
DEMETON	46
DIAZINON 25E	40
DIAZINON 25W	40
DIBROM	31
DIELDRIN	110
DIPHACINONE	64
DIPTEREX	39
DOWICIDE A	98
DOWICIDE 6	92
DOWICIDE 7	92
DRY VANCIDE 51	105

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ENDRIN	109
EPHEDRINE	16
ETHYL TUADS	73
ETHYL ZIMATE	46
EUGENOL	92
FLUORITE	112
FUMASOL-C	89
FUNGITROL 50	25
FUNGITROL 617	98
GUTHION	42
HEPTACHLOR	110
HTH	117
INDALONE	27
KEPONE	64
KHELLIN	106
LEDATE	47
LINDANE	109
MALATHION	41
MEPHENESIN	18
METHOXYCHLOR	14
METHYL SELENAC	47
METHYL TUADS	73
METHYL ZIMATE	47
NACAP	105
NIALATE	9

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NICOTINE	107
NICOTINE SULFATE	107
NUODEX COPPER, 8%	25
NUODEX PMA - 18	25
NUODEX ZINK, 8%	25
NUODEX 84	106
OVOTRAN	105
PARATHION	42
PHOSPHAMIDON	32
PHOSPHEN 4	38
PHOSTEX	73
PHYGON	99
PIMPINELLIN	90
PIVAL	87
PIVALYN	87
PMA	106
POLYGLYCOL 89-1	100
P-400 POLYGLYCOL	19
P-1200 POLYGLYCOL	19
PROLAN	10
QUINDEX	98
QUINDEX EMULSION BASE	98
ROTENONE CRYSTALS	87
SAFROLE	84
SAMMIDIN	89
SEVIN	50

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SIMAZINE 50W	80
SODIUM SALT OF DIPHACINONE	64
SODIUM TCA	25
SUPER AD-IT	25
SYSTOX	46
TEDION	77
TEPP	31
TERPOSOLE NO. 8	21
THEOBROMINE	107
THIATE A	105
THIATE B	79
THIODAN	78
TOXAPHENE	9
TRIACETIN	28
2,4,5T	23
VANCIDE BL	92
VANCIDE F-2083	85
VANCIDE 26 EC	105
VANCIDE 51Z	46
VANCIDE 89	73
VANCIDE ZP	84
VANICIDE Zm	47
VANLUBE PC	92
VIOZENE	42
WARFARIN	89
WARFICIDE	89
ZETAX	105

Table 3. List of submitters of compounds, together with the submitter number.

(2) Columbia-Southern Chemical Corporation
Subsidiary of Pittsburgh Plate
Glass Company
Barberton, Ohio

(3) The Dow Chemical Company
Midland, Michigan

(4) Geigy Agricultural Chemicals
Division of Geigy Chemical Corporation
P. O. Box 430
Yonkers, New York

(7) Miles Laboratories, Inc.
1127 Myrtle Street
Elkhart, Indiana

(9) Food Machinery and Chemical Corporation
Niagara Chemical Division
Middleport, New York

(10) S. B. Penick & Company
100 Church Street
New York 8, New York

(15) Cornell University
Department of Chemistry
Ithaca, New York

(16) Chemical Insecticide Corporation
30 Whitman Avenue
Metuchen, New Jersey

(18) Miles Chemical Company
Zeeland, Michigan

(19) Ozark-Mahoning Company
Chemical Division
310 West Sixth Street
Tulsa 19, Oklahoma

(20) Allied Chemical Corporation
Solvay Process Division
P. O. Box 271
Syracuse 1, New York

(23) Velsicol Chemical Corporation
330 East Grand Avenue
Chicago 11, Illinois

(25) Dr. Salsbury's Laboratories
Charles City, Iowa

(26) Allied Chemical Corporation
National Aniline Division
1051 South Park Avenue
Buffalo 5, New York

(28) U.S. Department of Agriculture
Agricultural Research Service
Entomology Research Division
P. O. Box 3391
Orlando, Florida

(31) Morton Chemical Company
Woodstock, Illinois

(34) Shell Development Company
Agricultural Research Division
Post Office Box 3011
Modesto, California

(37) Heyden Newport Chemical Corporation
342 Madison Avenue
New York 17, New York

(38) Nuodex Products Company
A Division of Heyden Newport
Chemical Corporation
Elizabeth, New Jersey

(39) R. T. Vanderbilt Company, Inc.
230 Park Avenue
New York 17, New York

(42) California Chemical Company
Ortho Div.
P. O. Box 118
Moorestown, New Jersey

(44) Chemagro Corporation
Latham Shopping Center
Latham, New York

(45) Sindar Corporation
Industrial Aromatics and Chemicals
Delawanna, New Jersey

(57) Miscellaneous

(58) Benzol Products Company
237 South Street
Newark 5, New Jersey

(60) Pennsalt Chemicals Corporation
309 Graham Bldg.
Aurora 7, Illinois

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The Department of the Interior, created in 1849, is our Nation's Department of Natural Resources, concerned with management, conservation, and development of water, wildlife, fish, mineral, forest, and park and recreational resources. It also has major responsibilities for Indian and Territorial affairs.

As America's principal conservation agency, the Department works to assure that nonrenewable resources are developed and used wisely, that park and recreational resources are conserved for the future, and that renewable resources make their full contribution to the progress, prosperity, and security of the United States, now and in the future.

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